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The Paper Trade Journal.

"The Consumption of Paper is the Measure of a People's Culture."

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Trade Topics.

Weir Measurements.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By W. H. Weston.

Estimating the amount of water flowing in a stream is very often necessary where there is not an excessive amount delivered; and although there are easy and simple methods of measuring the quantity, serious mistakes are sometimes made, either by the carelessness or ignorance of the person making the estimates. Where money is to be spent, even if it is a small amount, errors in estimating the water available are a serious matter, because even the cost of a small plant may be a total loss if the previous calculations are not correct.

Whoever is employed in making an estimate of the power of a given stream, care and good judgment are essential if the results are to be reliable. On large streams where a weir cannot be used the best method is to take a cross section of the stream at a proper place and find the average velocity of the water. Of course this is only an approximate method, and the results given are apt to vary from the truth more or less; yet in most instances the approximations given are sufficiently correct on large volumes of water, if the section of the bed and the velocity are got at with a proper amount of exactness.

In selecting a place on the stream, one should be taken where the general form of the bed is about the same for at least 100 feet, if such a place can be found, and it is also necessary to have the current of the water as steady and uniform over the entire length as possible. Eddies and counter-currents must be avoided in the given length to be used. In taking the cross section a number of points should be established on one bank, say about 20 feet apart, along the stream, and then set points opposite them on the other bank, using, say, four points on each bank 20 feet apart. Then from a boat, kept in line between the first two points, take soundings at regular intervals across the stream, these intervals being 5, 10 or 20 feet as may be necessary to give the desired accuracy of result. On an irregular bottom they should be closer than on a uniform bottom.

The next thing is to take similar soundings between the other points across the stream, and average the whole number of soundings on each line, and then take the average of the four sections as the one to make use of in the calculation; then in getting the velocity of flow the best method is to use a current meter, sinking it to regular depths at intervals along each of the lines used. The intervals of depth at which the readings are made must of course vary according to whether the stream is shallow or deep and local conditions, it sometimes being necessary to take the velocity by the meter at, say, 2 foot intervals of depth, and on other streams 5 or 10 foot intervals are all that are necessary. As the cost of a current meter is high, if one is not to be had the velocity of flow can be got approximately by carefully noting the time taken by floats placed in the stream and floated over a given distance. In streams of fair depth and uniform in cross-sections of bed, the average velocity of the water will be about 80 per cent. of that at the surface in the middle of the river; but this is only approximate under certain conditions and will vary greatly under varying circumstances; consequently, everything in any given instance which can in any way influence the results must be taken into consideration in making estimates of the volume of water flowing in large streams. Above all, use common sense and intelligent perception.

On small streams the use of a weir gives the easiest and most reliable and accurate means of finding the amount of water. The limit of size in a weir beyond which it is not practical to go cannot be given at any particular figures. Circumstances of construction will usually control the length to which a weir can be made, and it is not commonly used for depths of overfall much over two feet, although it can be employed with a greater depth. Probably the most common are between four and twenty inches depth over crest. The slight cost, together with the small amount of labor necessary to place the weir in position, makes it a very desirable thing to use where the water can be passed over a crest say less than twenty-five feet long, and where the depth over the board will not be more than two feet or thereabouts. On streams where the current is swift and there is no chance to dam the water so as to form a pond or good sized area of quiet water above the weir, a weir cannot readily be used, as in such an instance supplemental calculations must be made and the results attained are not usually reliable.

In using a weir under proper conditions there is no necessity for calculations, as the tables given in water wheel catalogues, &c., are reliable and give at once the quantity of water over a weir of given length and depth of crest. I have made some experiments simply to test the way in which the quantity actually delivered over an experimental weir corresponded with the tables as usually given, and found that they conformed completely as far as practical results are concerned. In arranging to make use of a weir, the first thing of importance is to secure a proper location; that is, one where the weir can be placed without having to fill in too much, and where there is a chance by the conformation of the land or banks of the stream to back up the water to a quiet pond, it not being necessary to have this area of water very large provided a current just above the weir can be avoided with the use of a small one, the important object always being to avoid the existence of a marked current in proximity to the weir. In order to have a weir work correctly, the water must simply spill over the crest and not flow across it with a current.

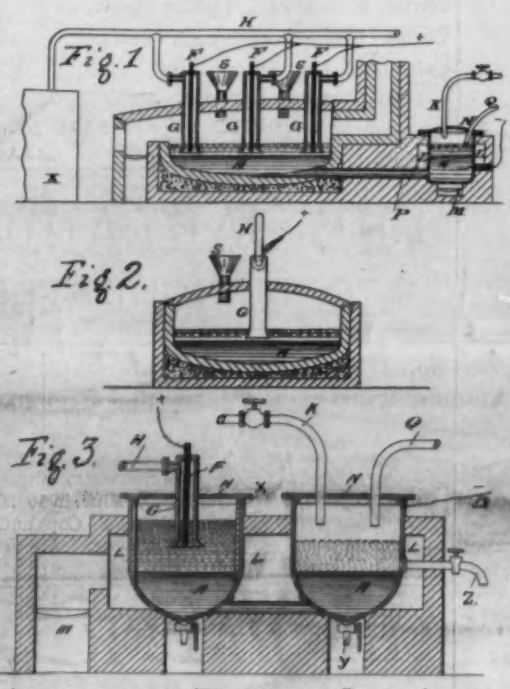
In placing the weir across a stream care must be taken, in sinking it into the bed and banking up to it at the ends, that there is no chance left for the water to work under the board or around the ends. The length of opening of a weir should not be more than two-thirds of the width of the stream at the weir, and should never be less than three times the depth of the water over the crest. The up-stream side of the weir must be smooth and vertical, and the depth of water from the level of the notch to the bed of the stream must not be less than twice the depth of water spilling over the notch. The surface of the tail water on the down stream side of the weir below the level of the notch must not be less than half of the depth of the water over the top of the notch.

In making the notch for a weir board it must be cut perfectly straight, with its ends at exact right angles with the crest. The crest and the ends must be beveled at a sharp angle so as to form a thin edge for the water to pass, the beveling being such that the water will flow clear of it in passing the notch. In placing the board in position the beveled side must be down stream. Sometimes plate iron is used in making a weir board, and with good results. The method employed is to make the board as usual, and if the crest is to be very long of course it must be built up by planks properly clamped together in exact line, all projection of clamps, &c., being on the down stream side, so as to leave the upper side perfectly smooth.

On the up stream side of the board a recess is cut along the notch to a depth equal to the thickness of the iron used, this being about one-eighth or three-sixteenths of an inch. The iron is planed and beveled to one-sixteenth inch on the edge which is to form the top of the notch and is then placed in position on the board and bolted to it, the heads of the bolts being countersunk through the plate. The upper edge of the plate is set at a little distance above the upper edge of the beveling on the board. The object in using the iron is to gain a thin straight edge for the water to pass.

With a weir carefully made and set so that the crest will be straight and level, and the measuring stake placed 3 or 4 feet above the weir, and with its top on an exact level with that of the notch, if the depth of water over the stake is correctly measured, the results given will be very reliable. The depth over a stake so placed is that always figured on as depth or head over the notch. When a weir table is not at hand the discharge can be very closely had in usual instances by the following:

Q=cubic feet discharge per second; L=length of crest in feet; H=head over crest in feet; $Q=3.33L\sqrt{H^3}$.



Apparatus for the Production of Caustic Alkali.

Apparatus for the Production of Caustic Alkali.

An improved apparatus for the production of caustic alkali, such as the hydrates of sodium and potassium, from salts of sodium and potassium, such as chlorides, by electrolysis, is herewith illustrated.

Figure 1 is a longitudinal section of a furnace, showing an auxiliary pot or vessel for the production of caustic alkali, and means for the collection of chlorine; Fig. 2 is a transverse section of the furnace, showing means for the continual supply of the alkali salt; Fig. 3 is a sectional elevation of two pots combined.

A charge of metal, A, which will alloy with sodium or potassium and which will not be affected by a fused caustic alkali when in a molten condition, such as metallic lead, is placed in the bottom of the furnace or vessel in which the operation is to be carried out, and this charge of metal or metallic lead constitutes the cathode A of an electric circuit, D F. Above this charge of metal or lead, A, is added a sodium or potassium salt, such as a carbonate of sodium or potassium, but preferably sodium or potassium chloride, as an electrolyte, and other salts, such as chloride of calcium or strontium, may be mixed with the chloride to reduce the temperature at which the electrolyte melts.

One or more anodes, F, of carbon or other suitable material are inserted into the sodium or potassium salt, and are surrounded by a case G of refractory and impervious material, such as fire clay, to protect them from the products of combustion of the fuel used in the furnace, and also serve to collect the chlorine gas, which is liberated and rises at the anodes where chlorides are used, and is led away by suitable pipes, H, to a chamber, X, containing calcic hydrate, or powdered slaked lime, for the purpose of producing bleaching powder. The whole charge of the furnace is exposed to gentle heat until the metallic or lead charge A is melted, and the sodium or potassium salt or mixture of salts is fused. An electric current is then passed through the charge, and electrolysis takes place. The chlorine is liberated at the anodes F when chlorides are used for the electrolyte, and is collected by the surrounding tubes G and pipes H, and carried to a chamber containing calcium hydrate, or powdered slaked lime, to be converted into chloride of lime or to be utilized in any other convenient manner. The sodium or potassium freed at the surface of the molten bath of metal or lead A is entirely absorbed, forming an alloy with the lead or other metal of which the bath or cathode is composed. An auxiliary pot or vessel, N, provided with a grate, M, and flues, L L, for heating it, is connected by a conduit, P, communicating with the lower part of the metallic bath in the hearth. The charge of alloyed metal, or lead and sodium or potassium (the cathode), is thus in free communication with the auxiliary pot or vessel N, and it is found that as the sodium or potassium is removed from the alloy in the pot N, in the form of a hydrate, it will be continually replaced by fresh sodium or potassium in consequence of the diffusion of further sodium or potassium from the hearth of the furnace through the metal in the conduit P to the metal in the pot N.

The conversion of the sodium or potassium into the hydrate—that is, into caustic alkali—may be effected by a jet of steam admitted by the pipe K to the surface of the charge in the auxiliary pot or vessel N, without chilling the molten alloy. The caustic alkali so produced may be removed in a fused condition by ladling or by an exit pipe, as may be desired. The production of caustic alkali may thus be a continuous process; the removal of the caustic alkali from the metal in the pot N being compensated for by the continuous deposition of the sodium or potassium by electrolysis in the metallic bath or cathode in the furnace in consequence of the diffusion of alkaline metal from the furnace to the outer pot.

The charge of sodium or potassium salts in the furnace may be maintained through a suitable hopper or hoppers, S; the metal or lead bath remaining as a collector and carrier of the sodium or potassium, and the chlorine (where chlorides are used as the electrolyte) being collected simultaneously for the production of bleaching powder, or otherwise.

Instead of an open hearth furnace, the process as described can be conducted in a pair or series of conjoined crucibles, N N, Fig. 3, one provided with a suitable lining, *x*, containing the electrolyte for electrolysis and the cathode, and the preparation of the caustic alkali being effected in the other, which is provided with a draw-off cock, *y*, in its bottom and the lateral draw off cock Z.

A French engineer has devised a somewhat novel type of safety boiler. It consists of a nest of horizontal tubes placed over the furnaces. Water, in the form of spray, is injected into this "nest," and in this condition it is instantaneously evaporated and superheated. It is asserted that the tubes do not burn out, while it is further contended that the evaporative power of the boiler is remarkable. The apparatus is so arranged that water in bulk is never, and cannot be, admitted to the tubes.

Paper Mill Problems—I.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By James F. Hobart.

In beginning this series of articles, I have no startling innovation to propose, but expect to treat everyday repairs in the hope of assisting some superintendent, paper maker or millwright in his daily struggle to keep the mill running at its highest degree of productive economy.

Paper mill success consists of little things, not of any great ones. It might be said that failure is due to the same cause, *i. e.*, the lack of proper attention to insignificant details. Really the term insignificant is a misnomer, for no detail in a paper mill is too insignificant to receive the attention which it deserves. Aside from the proper conduct of the paper making department, the money making possibility in paper mills depends almost entirely upon the repair bill. I have had cause to state in these columns heretofore that were it not for repairs a paper mill owner would make an independent fortune in ten years. There is a way of eliminating many of the costly repairs, shut-downs and rebuildings to which paper mills seem to be specially liable.

The way to do this is to avoid the heavy repairs by anticipating them; by doing them "just before they are needed." When that is done the repairs will be entirely small ones; there need be no grand overhauling or rebuilding.

Changes in a paper mill require the most careful consideration. Well studied plans will help the mill superintendent as well as the millwright and architect. Many expensive changes which must be made after the work of construction has begun may be avoided by a proper consideration of the matter before work is started. A single example will suffice to illustrate. During the construction of a large paper mill the superintendent thought that it would be well to make extra changes in the wheel pit by blasting out that part of the mill 3 feet lower than the construction plans called for. As a result, when the wheels came to be set, it was found that the wheel pit was 3 feet lower than the tailrace below the mill, and it became necessary to put in several extra barrels of cement and many cords of stone to fill up the cavity caused by the superintendent's idea. The expense amounted to several hundred dollars, which could have been avoided had he given the matter proper consideration before starting it. Hence the above remark: make plans and study them carefully before beginning even the most inexpensive changes.

The tendency in paper mill motive power is toward large steam engines in place of the small ones installed several years ago. The ideal method would be, if carried further, to locate large engines close to the boiler; then use the electric generator, copper wire, and the motor as machinery of transmission, instead of the heavy shafting and gearing now employed for that purpose. As stated, a few years ago small steam engines were connected to each individual machine; while this was very handy for the operator, it resulted in a decided loss of efficiency as calculated from the coal pile through the steam engine, to the amount of work done. It is well established that a small engine has not the same percentage of efficiency as a large one; therefore the division of power by means of several small engines is not economical when compared with the work done by larger machines of this kind.

So it is with water power. Years ago a single wheel (occupying a large portion of the mill) was used; after this small turbine wheels, one to each machine or pair of machines, were largely employed. Now the tendency is again toward the larger water wheel; but instead of the old overshot, tub and breast wheels, the vertical and horizontal turbines are exclusively utilized. Great efficiency is obtained from a water

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wheel at whole gate, but a lower degree of efficiency is obtained when the gate is partially open. In order to secure high efficiency during the low water period it is necessary to have a smaller wheel to be used when the available quantity of water will not run the large wheel. Two wheels are then necessary, and modern engineering, instead of allowing one wheel to remain idle while the other is used, so plans the installation that both wheels are used when water is plentiful.

One wheel is larger than the other; therefore when the supply of water decreases it is only necessary to shut down the small wheel. Let the supply be yet further reduced, and the large wheel can be closed down while the smaller one is started up. Three capacities are thus provided, each having an efficiency of 82 to 85 per cent., and even greater, if the stories told by the wheel makers can be depended upon. This method of planning wheels is best where the power units are necessarily large. Under comparatively low heads it has not been practical to make wheels larger than 300 or 400 horse power. It is then necessary to duplicate these units when multiples of that power must be installed. The ordinary paper mill, operating two machines and from six to twelve rag engines, may use 300 or 400 horse power provided it can get it.

In such a mill two wheels of 200 and 300 horse power, respectively, make a good water power plant, and with the addition of one or two steam engines for times of excessively low water, the mill may be regarded as well supplied with power units. When large water wheels and steam engines are used large shafting becomes a necessity; but such shafting may be made quite short, and ropes or cables may be used to advantage in conducting the power from the water wheel or engine to the various machines. Steam can also be economically coupled to the main shaft, and steam engine economy is, as stated, much greater when large engines are used; but these are large matters, and as it is the intention of the writer to discuss the small ones in this series of papers, he will barely touch upon such great mill questions of the day.

In the wheel pit wheels are self-contained nowadays. A man does not have to crawl through penstocks in order to get at the water wheels. The wheels are made self-contained, inclosed in neat water-tight iron or steel cases and designed to be placed high and dry in a light room upon a good floor. Such wheels are much more "getatable" than were the old "mud turtles" and wheels yclept "water suckers" so common in paper mills twenty years ago.

In setting wheels for the blocking to be used under water nothing is better than clear white pine. This wood becomes coated with a kind of slime by exposure to water, and does not wear or rot out under the action of either still or running water.

In connecting the wheel with the mill pond a cylindrical penstock is best. Turns, elbows and bends should be avoided if possible. When such connections must be used the penstock must be made enough larger to compensate for the loss of head or friction due to forcing water through crooked passages. Some very interesting calculations of the loss of head, due to friction through long and crooked pipes, can be made by the engineer or millwright. The data necessary is very simple, as also are the methods of calculation. Haswell, Trautwine, Templeton or any other engineering authority gives methods and formulas for the calculation of the flow of water through pipes, conduits, canals and rivers. The paper mill man will do well to study a little upon this matter. It is almost unnecessary to state that water wheels should be most solidly set, and rigidly bolted to their foundations.

Sometimes a wheel behaves much differently when light from what it does under pressure. When the head and fall amount to 30 or 40 feet the pressure and consequent distortion of the flume and wheel case may be considerable. This little point should be closely watched by the millwright. Nothing will break gears or cause so much loss of power as to have the water wheel get out of line. The wheel shaft and gearing are very susceptible to such changes of alignment.

Cut gears must be used upon all fast running water wheels, and a very little deflection of either shaft is sufficient to break gears which run as closely as cut gears; therefore the shafts must be kept absolutely level or plumb, and a man must be detailed to visit the water wheel gearing at least twice every day, and make the necessary tests with a good level, should the wheels show any tendency to get out of alignment. Indeed it is well to have them looked after in the manner above stated at least once every day, no matter whether they have a tendency to get out of place or not.

Sometimes in overhauling an old mill it is necessary to use the old vertical wheels. In such cases I would throw out the jack gears and use ropes instead of belts. Usually the jack gears are retained, and a grooved pulley is placed thereon. The rope then makes connection direct with the pulley on the main shaft. In order to dispense with the jack shaft and its noisy gear accompaniment, place the rope pulley direct upon the wheel shaft, and then connect with the main line by the old-fashioned "reel belt" connection, so often used where two shafts must be run in planes at right angles with each other.

In rope drives provision should always be made for taking up the slack; in wire cable work the slack is worse to handle than when manilla ropes are used, but there will be some slack in both cases. It is necessary to use a weighted carriage for this purpose, the tightened sheave being mounted upon a carriage, which can be drawn back several feet as the rope stretches. The movement of the tightener carriage should be limited temporarily between movable stops, so as to make it automatic to a certain extent, say from 12 to 18 inches. When the carriage gets about to the end of its automatic movement, through stretching of the rope, then the stops may be moved onward another foot, or a foot and a half, and the moving process can be repeated as the rope stretching progresses.

(To be continued.)

Fifty years ago a horse power cost 6 or 7 pounds of coal per hour. To-day a good compound engine will produce a horse power at 1½ pound of coal per hour. Water power costs nearly as much now as then, and New England engineers say steam is now as cheap as water power, especially if the exhaust steam from the engine can be utilized.

Correspondence.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, January 24, 1895.

From a purely business standpoint the paper manufacturers of this valley and State cannot aver that they are in the heyday of their existence. There have been better times under more favorable conditions, and there have been worse times under more inauspicious conditions. A spirit of satisfaction predominates. The strawboard and straw paper men are the happiest. No material changes are to be noted since last week.

Daytonians, Miami Valley paper manufacturers, and, in short, representatives of the industry from abroad and of all industries extant, gathered at Cincinnati this week, the occasion being the meeting of the National Manufacturers' Convention. Delegates responded in liberal numbers, and the convention was one of the most prolific of its kind ever held in the United States. Subscriptions to the amount of $10,000 had been voluntarily made, and with such a sum Cincinnati was enabled to afford her distinguished visitors a royal welcome.

Among the prominent men in attendance who furnished the oratory were: Gov. Wm. McKinley, Mayor John A. Caldwell, of Cincinnati; Hon. Warner Miller, Senator John T. Morgan, M. E. Ingalls, of railroad fame, and others. The latter spoke especially on the South American trade, and offered pungent and forcible suggestions as to how to secure the same. All addresses were of particular importance, and in a brief report no justice could be done to a single speaker. Suffice it to say that the following mentioned topics received attention. There were other subjects, but these were of unusual moment:

The cementing of a national organization of the manufacturers of the United States for the purpose of considering national questions affecting their interests.

The advocacy of carefully considered legislation to encourage manufacturing industries of all classes throughout the country.

The discussion of ways and means whereby the trade relations between the United States and foreign countries may be developed and extended.

The establishment in South American capitals and at other desirable points of expositions for the display of American products.

The extension of the commercial marine of the United States.

The recognition of the Nicaragua Canal and the control of the same by the United States Government.

The re-establishment of reciprocal trade relations with foreign countries.

All business sessions were conducted in the Odd Fellows' Temple, and the final arrangements consisted of a lighter entertainment. For instance, on the evening of the first day, Tuesday, the delegates were accorded their choice of entertainment at either the Grand or the Walnut street theatres, through the courtesy of the managers. On Wednesday afternoon, immediately following the business meeting, an informal luncheon was served at the Queen City Club, and in the evening the Symphony Club of the Chamber of Commerce gave a concert, while on Thursday evening came the grand finale in a reception and promenade concert at the Scottish Rite Cathedral.

Officially, Dayton was represented by the following named delegates, appointed by the Board of Trade, although local manufacturers were in numerous attendance: John W. Stoddard, of the Stoddard Manufacturing Company; W. E. Crume, of the Crume & Sefton Paper Novelty Company; R. P. Burkhardt, chair manufacturer; C. W. Raymond, machinery; J. H. Vaile, of the Stilwell-Bierce-Smith-Vaile Company; J. Kirby, Jr., Dayton Manufacturing Company, and L. D. Reynolds, of Reynolds & Reynolds, blank book manufacturers.

Joseph H. Dowling, internal revenue collector, has received his blanks for the collection of the income tax and will shortly swoop down upon the unsuspecting paper manufacturer, broker, dealer or all those connected with this prosperous trade. An income of $4,000 is a handsome thing, but its total disregard may be a bit painful at the trying moment. An official list of those who will be visited by the truth seekers shows that there are about 750 fortunate (or unfortunate) ones in this county, nearly all of whom reside in Dayton or its suburbs. Our neighboring county, Butler, of which enterprising Hamilton is the county seat, shows a smaller list, while Hamilton County, the next south, furnishes the largest number by reason of its relatively greater populous scope. Of this number, how many are in the paper trade?

A little sensation was stirred by the commercial breezes this week in the announcement that H. S. Sternberger had brought an action against Col. W. P. Orr, the treasurer of the American Straw Board trust, asking $3,000 damages by reason of alleged fraudulent misrepresentations and concealments in the sale of thirty-two shares of the Dayton Natural Gas stock. In the early history of the Dayton Natural Gas Company Colonel Orr carried a heavy load of its common stock. The company was compelled to quit business after a series of flirtations with the city of Dayton and its common council. Developments led to a Lexow investigation, as charges of bribery were flying thick and fast. Colonel Orr, as president of the company, is charged with having knowledge of its affairs.

The extent of the surprise and consternation created by the arrest of Chas. W. Gunckel, ex-president of the Middletown Paper Company; his son, E. W. Gunckel, and J. W. Johnston, members of the company, may be more adequately surmised than described. The facts were substantially as stated in last week's correspondence to THE PAPER TRADE JOURNAL. Indictments read as follows: Charles F. Gunckel and James Johnston, embezzlement in the sum of $10,000 on February 7, 1891; C. F. and E. W. Gunckel, embezzlement in the amount of $8,000 on December 31, 1891. Although it was first understood that the amounts aggregated $13,000, the sum has been increased, and, as shown by the statements of the indictments, reaches $18,000.

After the arrest of Mr. Gunckel and his son, they were taken to Hamilton by the sheriff of the county, and gave bonds in the sum of $1,000 each, with S. D. Fitton, Ira S. Millikin and Charles S. Barnitz as sureties. Mr. Johnston is in Chicago, and was notified by his attorney that the court demanded him to give a bond in propria persona, within ten days, which of course will necessitate his personal appearance before that tribunal.

It is rumored that the grand jury may reconvene in order to investigate the premature publicity given the announcement of the indictments by two Middletown dailies. Newspaper enterprise even aggravates the courts in this part of the country. M. V.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., January 22, 1895.

An unusual quantity of interesting paper mill happenings has developed during the week just past in this valley, which is something very encouraging to dispensers of news, who, like the paper manufacturers themselves, have been complaining of very dull times of late.

First, of course, comes the doings of the "English syndicate," and paper makers are discussing with much interest the latest deliverance along this line. The occasion of all the talk is the receipt last week by all of the paper companies who have given options on their plants of a letter from Mr. Butterworth stating that a couple of experts had been engaged to come to this valley and look over the properties according to the provisions of the options. This letter was followed by another from the experts themselves, confirming the first and stating that they would like to come here as soon as the mill men were ready for them, which they hoped would be in a very short time. The manufacturers are somewhat at sea about what it is that the experts want to look over. The general opinion is that it means the books of the companies, and the manufacturers say they gave no privilege of this sort in their options, and many of them declare that their books shall not be touched by any outside parties. They say that they are ready for the experts to come at any time, but if it is the books that they want to get hold of they will be disappointed. Mr. Butterworth did not arrive last week, as was expected, but it is now said that he is to be here to-morrow. He will probably be able to explain to the manufacturers what is contemplated. The condition of the options, it is understood, is that the mills shall show profits of at least 15 per cent. a year for the five years preceding the panic of 1893, and this the mill men say they are willing to do, but they do not want anyone looking into their books at present.

The paper manufacturers of this city held a meeting last week and organized an association to be called the Wisconsin Paper Manufacturers' Association. The objects of the association are to promote social intercourse among the paper manufacturers of the State and to protect in all proper ways the interests of the manufacturers in the State. It is desired to unite in the association all the manufacturers in the State, and to this end circulars have been sent out, containing invitations to a banquet to be held at the Waverly House, in this city, probably next Saturday evening, although the date is not yet exactly determined upon. The officers of the association were elected as follows: President, Peter Thom; vice-president, J. S. Van Nortwick; secretary and treasurer, W. B. Murphy. The executive committee chosen was composed as

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FOR THE SALE OF THEIR VARIOUS BRANDS OF

follows: Peter Thom, J. S. Van Nortwick, W. B. Murphy, E. A. D. Reynolds, Thomas Pearson, W. A. Gerbrick, A. L. Smith, Jr., and W. S. Taylor. It is expected that the association will accomplish much good for the trade in this State.

The new sulphite digester for the mill of the Combined Locks Paper Company arrived last week, and Contractor C. B. Pride, of this city, took a force of men to the mill last Saturday to begin the work of setting it up. It is 10 by 35 feet in size, and will be provided with the Wagg lining, the same as the other digesters used by this company. The acid plant in connection will have to be increased in size to provide for the new digester, and this work will also at once be taken up.

The outbreak of smallpox continues to be confined to the family in which it at first appeared, but all the other members of the family—six in number—are now afflicted with it. The authorities are enforcing the most rigid quarantine. In this connection Supt. Peter Thom stated to your correspondent that he had never known of a case of smallpox coming from a paper mill in the ordinary course of the treatment of the rags. It was always the case that the rag sorters who took the smallpox took it by culling out something that looked good from the rags, taking it home and wearing it without the proper precautions. A piece of underwear or something of that kind worn next the body was a prolific cause of trouble.

One of the employees of the Kimberly & Clark Company, at the Kimberly mill, named Ernest Schlafer, had an interesting experience one night last week. A small drawbridge over the canal connects two departments of the mill, and the man was engaged in closing the bridge when he slipped on a piece of ice and went into the canal. He grasped an iron post upon which one of the supports of a trestlework rests, and, it being a very cold night, he immediately froze to the post and could not loosen himself, while the roar of the mill drowned his outcry. Some one came along, fortunately, just as he was about exhausted, and pulled him out.

The annual meeting of the Green Bay and Mississippi Canal Company was held in this city last week, and the following named officers and directors were elected: President, E. Mariner; vice-president, J. S. Van Nortwick; secretary and treasurer, A. L. Smith; directors, in addition to the above named, B. J. Stevens, A. W. Patten, W. M. Van Nortwick and D. E. Reese.

John Van den Bloom, an employee at the mill of the Combined Locks Paper Company, had the little finger of his left hand taken off in a circular saw last Thursday. Three other fingers were badly lacerated.

A steam whistle 2 feet long and 8 inches in circumference has been attached to the boilers of the mill of the Winnebago Paper Mills at Neenah, and will be used for fire alarm purposes in the "Twin Cities."

At a recent meeting of the stockholders of the Nekoosa Paper Company it was stated that the company's plant had cost $415,000.

Mrs. John Strange, wife of the Menasha paper manufacturer, was thrown out of a carriage the other day, but fortunately sustained no serious injuries.

In regard to the improvements to be made at the mill of the Howard Paper Company, in Menasha, it is stated that the beaters will be replaced by new ones, and that the machines will be thoroughly repaired, and everything put in first-class condition. It is thought that the improvements will be completed in about sixty days. A higher grade of paper will be made.

The Pioneer Wood Pulp Company, of Grand Rapids, has contracted its entire product for 1895 to the National Box Company, of Chicago, and will put in several thousand dollars' worth of new machinery to increase the output. The pulp will be supplied in the form of board and will be used in the manufacture of boxes.

The Appleton Machine Company, of this city, is now engaged upon the work of making a new wet machine for the National Box Company.

Col. H. A. Frambach spent the entire week in Chicago last week, and reports that he was encouraged at what he found in the condition of the market. He thought he found a little tendency toward better prices, and succeeded in securing some very good contracts. The Colonel says that the new machine at the Badger Paper Company's mill in Kaukauna turned out an average of more than 10 tons of paper a day last week, notwithstanding the low water. Its capacity under favorable conditions, he thinks, will be 15 tons daily.

William M. Van Nortwick, of Batavia, Ill., was an Appleton visitor last week.

E. R. Marshall, of Turner's Falls, was in town last week calling on the trade, and departed last night on his way to Hot Springs, where he will spend two or three weeks, taking a well-earned rest.

C. W. Brown, formerly with the Fox River Paper Company, of this city, who has lately been in California, was back in town last week for a few days. He will probably be located in Chicago.

W. H. Bucher writes that his address is now Chicago instead of Cincinnati, the firm of Harrison Brothers & Co. having removed from the latter city to commodious quarters on Lake street in the Windy City.

L. H. Waldo, formerly superintendent of the Appleton Woolen Mills, has been given an appointment at Madison during the present session of the Legislature.

FOX RIVER.

CENTRAL NEW YORK.

[FROM OUR OWN CORRESPONDENT.]

SYRACUSE, N.Y., January 23, 1895.

The Court of Appeals has heard the arguments in the Skaneateles Paper Mill case, and others, as to the damages due from the city of Syracuse in taking water from Skaneateles Lake and creek. The commissioners to assess damages awarded about $200,000. This was unsatisfactory. Aside from these claims against the city of Syracuse claims were filed against the State in the same matter. The two cases, argued in the Court of Appeals, were those of John E. Waller and the Skaneateles Paper Company against the State. The appeals were taken from the final awards made by the State Board of Claims. Both Mr. Waller and the Paper Company alleged damages sustained by them as riparian proprietors on Skaneateles outlet by the stoppage on the part of the State of the flow of water from the first day of February to the 30th day of April, 1892. The claims were tried before the Board of Claims on April 13, 1894, and that tribunal found that the claimants had suffered the alleged damage, but it held that the State was not liable for the damage, as the appropriation by the State in 1843 of the Skaneateles waters cut off the rights of the riparian owners. The appellants argued that a consideration of the history and proofs demonstrates that the State never acquired or intended to acquire at Skaneateles Lake anything more than the rights of an upper riparian owner. It would look very much as if the State was going behind an old appropriation to get around paying what the mill men should rightly have. The outcome of both appeals against the city of Syracuse and against the State will be watched with great interest.

The Rochester papers are again full of the defunct Rochester Paper Company's affairs. Readers of THE PAPER TRADE JOURNAL will remember that at the time of the failure the Rochester banks secured themselves as best they could, and now comes the receiver's assertion that the creditors will receive about two cents on the dollar. H. H. Pryor was appointed receiver afterward, and his accounts have been examined before a referee on complaint of the creditors. These accounts show unsecured liabilities amounting to $232,541.83. The receiver testified that the value of all of the assets he could scrape together was $12,270.65, and this amount is covered by a mortgage.

W. E. T.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, January 24, 1895.

Reports from those in close touch with the paper business are not of an enthusiastic nature this week.

Jobbers say that business is very quiet at present. Prices, it is said, are tending to a lower level, due to forcing paper on to the market when consumption will not take the great quantities offered.

Such a story is no fairy tale, and everybody interested in paper is pretty well familiar with the conditions which now exist. The question is whether improved conditions can be devised. Manufacturers can regulate the supply; but the demand and the consumption of paper depend on others. Something more must be done besides regulating the supply, and something must be done before the supply can be regulated. It does seem as if the bright men of the paper trade could formulate a plan by which their industry can be carried on with more profit to themselves. How would it do for a number of paper manufacturers to contribute to a cash prize of $25,000 or $50,000, open to all who may choose to contest, and to invite plans for handling their product at prices of one-quarter to one-half cent per pound better than now rule? Could a system of handling news be devised to produce that result, mills making news paper would also make some money. Offer the inducement and I will present my plan.

Imports of paper stock the past week were really encouraging, as they show some improvement in this particular branch of trade. The receipts included 5,953 bales of rags, 821 bales of waste papers, 1,421 bales and 570 coils of manillas, 484 bales of flax waste, 1,686 bales of wood fibre and 1,348 bags of sizing.

Paper valued at $5,600 and books valued at $1,103 were exported from Boston during the week ending January 18, 1895.

Arrangements for the next meeting of the Boston Paper Trade Association, to be held on the evening of February 6, are now being made. Secretary Forsyth's official notice will be issued early the coming week, when the trade will see how entertaining a meeting is to be enjoyed.

The midwinter meeting of the American Paper Manufacturers' Association, to be held in New York next Wednesday, will attract quite a party from Boston and New England. Those reported as billed for the Delmonico banquet are: Hon. William A. Russell, A. N. Burbank, George W. Russell, Col. S. P. Train, Charles D. Brown, James B. Forsyth, William T. Barker, Col. E. H. Haskell, George W. Wheelwright, Adna T. Denison, William H. Claflin, all of Boston; Hon. Wellington Smith, of Lee, Mass.; Hugh J. Chisholm, of Portland, Me., and J. Fred. Webster, of Bangor, Me. It is quite likely that there will be others there from this section.

J. Fred. Webster, of Bangor, Me., is in town to-day. Ashley B. Tower, the paper mill architect, of Holyoke, Mass., is also here, and they are both at the Parker House. Mr. Tower has drawn plans for a new 40 ton ground wood pulp mill which Mr. Webster is building at Orono, Me. They are in conference to-day arranging details for machinery.

John Robertson, of Austin & Robertson, paper dealers, Montreal, Canada, was seen in trade circles this week.

W. G. Sloat, Carter, Rice & Co.'s New York representative, is spending a few days in town.

Charles H. Milliken passed through Boston yesterday en route from New York to his home at Mechanic Falls, Me.

Other recent trade visitors seen during the past week were Theo. P. Burgess, of Berlin Falls, N. H.; Frank P. Carpenter, of Manchester, N. H.; W. J. Morton, of Portland, Me.; James Wallace, of Westfield, Mass.; Charles S. Mayo, of Lawrence, Mass.; A. N. Mayo and C. H. Southworth, of Springfield, Mass.; Mr. Williams and Henry E. Whitcomb, of Worcester, Mass.; George W. Crafts, Mr. Sturtevant and Mr. Judd, of Holyoke, Mass.; George K. Baird, of Lee, Mass.; Mr. Barden, of Fairfield, Mass.; James Linton, of Pawtucket, R. I.; Fred. Temple, of Pepperell, Mass.; R. G. Thornton, of Richmond, Va.; Theo. S. Kingsland, P. H. Flynn, W. H. Parsons and I. R. Elston, of New York; Frank Grubb, of Chicago; Joseph Philbrick, of North Dighton, Mass., and T. L. Barnes, of Plantsville, Conn.

Sociability and good will are not confined to the heads of the city trade, since teams of five made up of the employees of four of the leading paper houses of the city meet every Saturday afternoon in a bowling contest. The tenpin tournament has been going on for eight weeks, and four more games in the series are yet to be played.

The Stone & Forsyth team lead so far with a total score of 15,952, the team having won six games and lost two, J. B. Reed being the leading man on his team, with an average score of 145.

The Carter, Rice & Co. team has won five games and lost three, its total score being 15,900, with M. Fields leading his team with an average score of 143.

The Pulsifer, Jordan & Co. team has won three games, lost five, total score 15,269, J. W. Nowell having an average score of 150.

The A. Storrs-Bement Company team has won two games, lost six and has a score of 14,813, E. E. Allan leading the team with an average score of 140.

These Saturday afternoon games serve to draw quite a large gathering, and the enthusiastic sympathisers of the different teams seem to get as much fun out of the contests as do the bowlers themselves. The Stone & Forsyth team has a good lead and the boys are claiming the pennant even now.

The handsome calendar for 1895 issued by Charles E. Perry & Co., paper cutters to the trade, now being presented to the firm's city patrons, is indeed a thing of beauty. The size of the mount is 12x22 inches, the pictorial view being a sepia print of a reproduction of a famous painting by Bodenhauser, which represents a maiden standing among a profusion of foliage and blossoms. The calendar mount is finished with an edging of fancy silk fringe, which gives an extra ornamental touch to an artistic print. The calendar is certainly worth having, and it is well worth asking for, and many an applicant finds his way upstairs to Chas. E. Perry & Co.'s office, No. 185 Congress street, for one. The calendar, of course, carries upon its face the firm's advertisement, but to the city trade such an announcement is hardly necessary, for there is not a paper dealer, printer or stationer in Boston who does not know Chas. E. Perry & Co. and just the line of service which the firm renders to the trade. Mr. Perry, the head of this establishment, really deserves much credit for the manner in which he has built up his business. The city trade remember well when he was located in a small basement room on Federal street ten or twelve years ago, with a single cutting machine. Now he has two floors at No. 185 Congress street, with a dozen or more paper cutters and other lines of special machinery necessary for his various lines of work, and only in very dull times is a machine idle. For twelve weeks Mr. Perry says that his entire force has been compelled to work overtime to get orders off, and the rush is not over yet.

DELESDERNIER.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., January 26, 1895.

A prominent paper manufacturer in this city said yesterday when asked the condition of the paper trade: "We could easily handle more business without rushing in the least." Such I find is the case in nearly all of the mills in the city. They could do more work with no additional men or without working overtime. The employees are kept at work and it is stated that this is about all that can be said.

During the week I have called upon some of the fine writing mills and also some of the book mills in the city. From each of the manufacturers one can gather about the same report. "Business is fair, not very dull and far from being at its best." The manufacturers, however, have a hopeful feeling that good times are coming soon and that the merry rush of the paper machines

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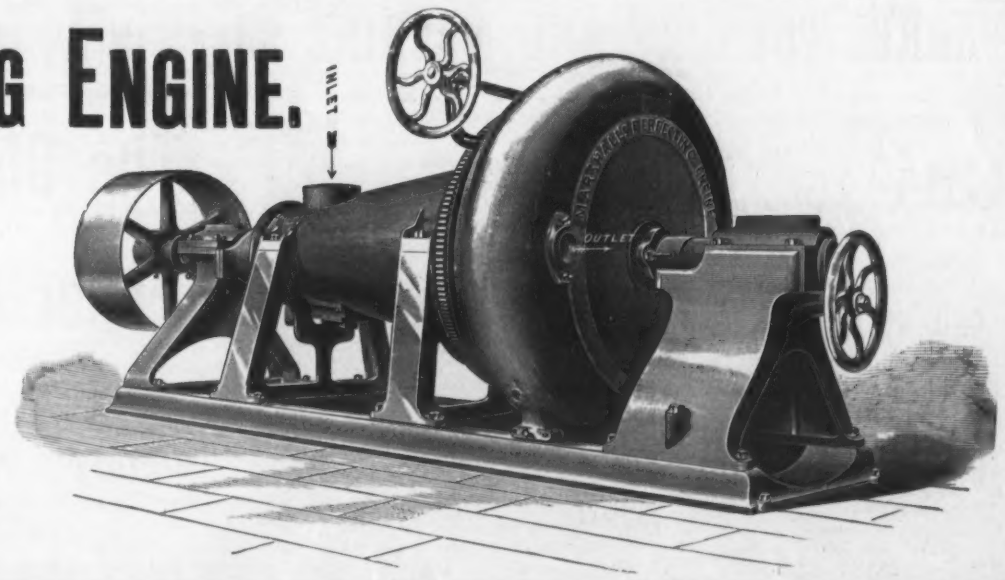
This Engine will produce a **better finished, stronger** and **more even** sheet of paper from the same materials than can be produced by any other mechanical process, and at the same time will greatly **REDUCE** the **TIME** and **POWER** required for Beating.



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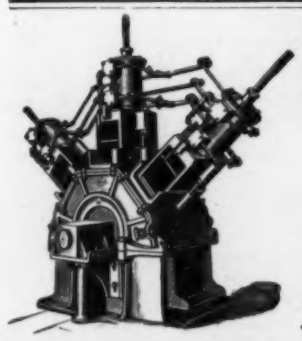

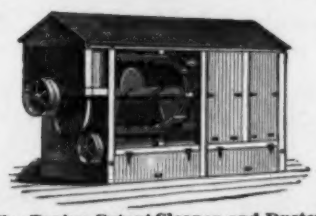

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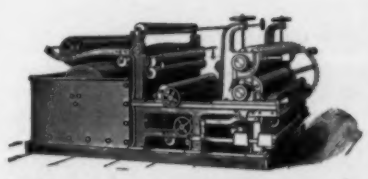

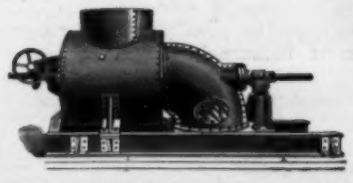

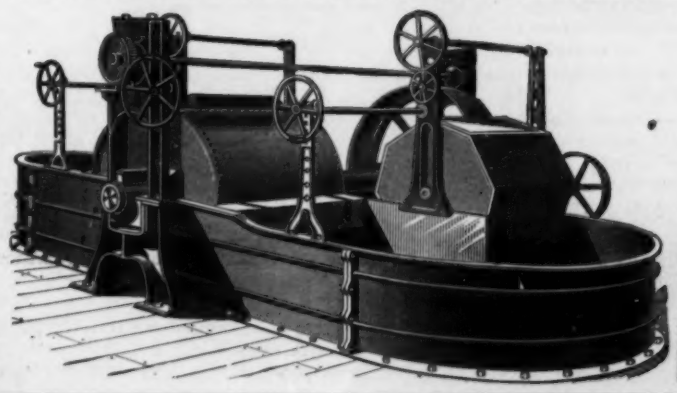

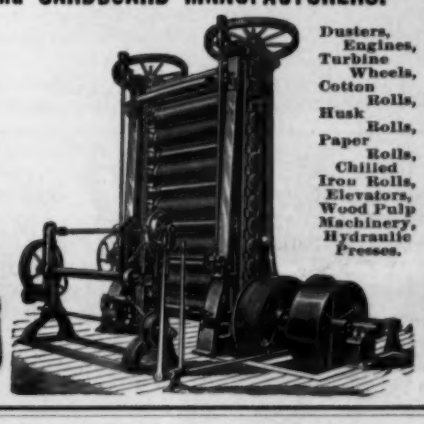

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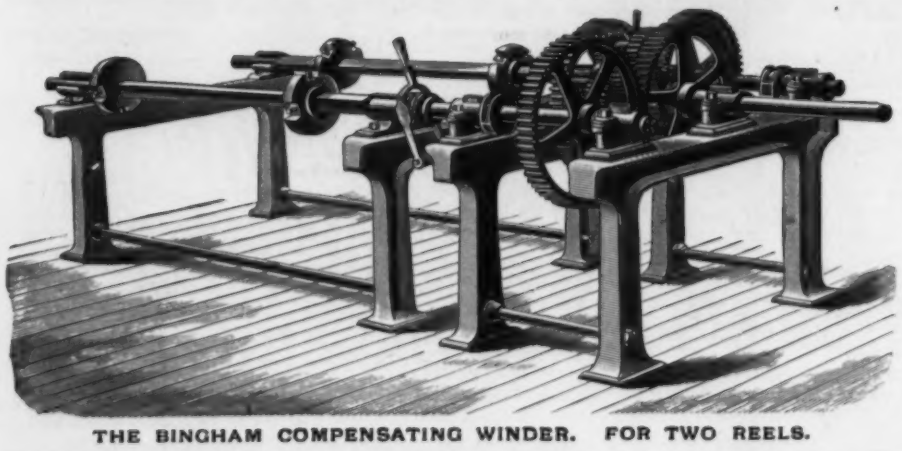

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That every ***New England Pulp Grinder*** ever made or sold in this country has been designed, built, and first sold by me; and I am sole owner of the right to use the name "New England" as applied to a pulp grinder, as the United States Patent Office records will show, and no other person is or has ever been interested with me in the manufacture of Pulp Machinery.

All the rights and interest of the Scott & Roberts Company and the New England Pulp Machine Company which were organized for the purpose of selling my pulp machinery were acquired by me more than four years ago, since which time many changes and improvements have been made in the New England Pulp Grinder.

I am prepared to furnish at short notice everything required for making ground wood pulp, including plans and specifications, and estimates for which I will furnish same; and erect the whole, if required, ***guaranteeing a greater production of pulp,*** with a given power and at a less cost for manufacture, than can be done by any other machines; and no pay asked until machines perform as stipulated.

Can furnish any of the leading ***Turbine Water Wheels,*** fifteen styles ***Pulp Grinders, Noiseless Screens, Wet Presses, Sawing Machines, Barkers, Splitters, Pumps, Shafting, Mortise Gears, Pulleys, &c.***

Remember you can have a ***guaranty*** of the ***cost*** of ***your mill;*** also of the ***cost per ton to manufacture the pulp.*** Liberal terms.

I have on hand ***six Pulp Grinders,*** three pockets, to grind wood 17 inches long; and ***eight Grinders,*** heavy pattern, to grind wood 24 inches long; also ***Barkers*** and ***Splitters.***

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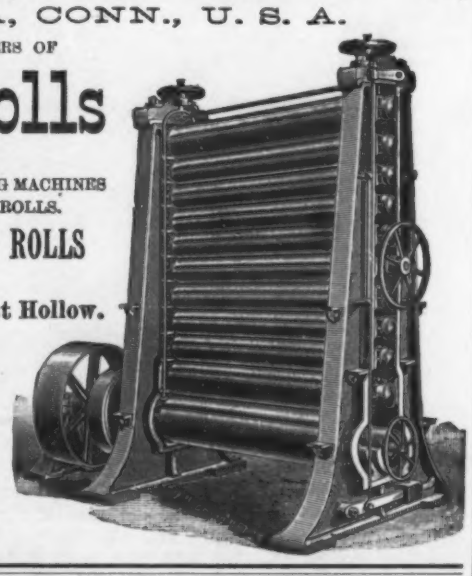

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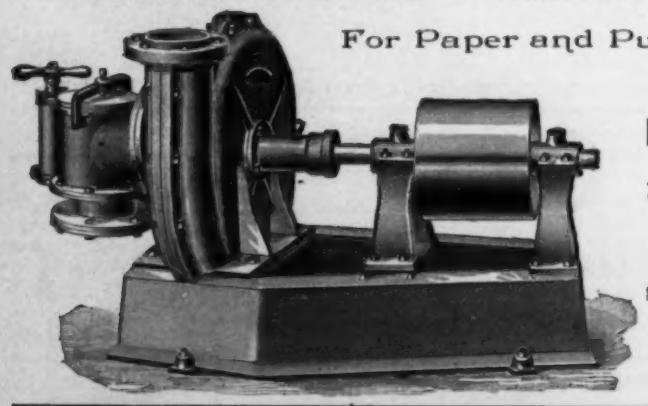

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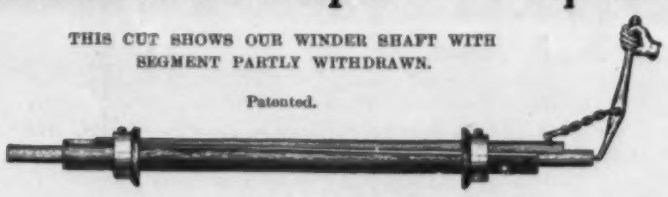

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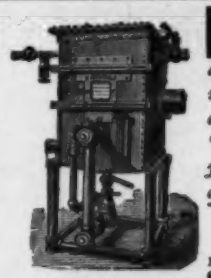

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will be heard in the spring from all parts of the city. There is business enough in each case to pay the running expenses of the mills and to give the owners a little profit besides. This is all they will demand for the present.

With the coming of spring, which is not far distant, the manufacturers are feeling about to see if they will be warranted in putting up additional buildings, and as far as can be learned none of the paper mills will put in additional machinery this year. The annual shut-down of the mills will take place early in July, about the Fourth, and at that time some minor repairs will be made upon the mills, such as putting in new floors in some cases or making a few changes in the location of small machinery. Some of the mills will also put in new penstocks.

The repairing of the Jackson street sewer this summer will not seriously affect the running of the mills, which are situated on the third level canal, as the work will take only a short time and the mills will call in their reserve steam power.

The annual meetings of the paper making corporations will be held within a short time, and there are no rumors of changes in officers. The stockholders of the mills are satisfied with the manner in which the business of the corporations has been conducted, and all of the present officers will probably be retained.

The George R. Dickinson Paper Company was among the first to hold its annual meeting, which was held this week, and resulted in the retention of these officers: Treasurer, Henry S. Dickinson; clerk, I W. Bullens; directors, I. W. Bullens, Edward A. Clark and Henry S. Dickinson.

At the recent convention of the Junior Department of the Young Men's Christian Association in Holyoke a brief history was given of the paper industry of this city. It was termed pre-eminently the paper city of the world. The historian gave the number of mills in Holyoke as thirteen (twenty-six is the correct number), and said that Holyoke manufactured some 230 tons of paper a day. This he thought was a good showing for a city of its size. (The reported capacity of these mills is 273½ tons).

A wedding of interest in the paper trade was that of Franklyn M. Street, a member of the Eastern Paper Company, of Springfield, and Jennie E. Sears, daughter of Lemuel Sears, of this city. The wedding was a society affair. Mr. and Mrs. Street will make an extended journey through the South and will return about the middle of March. Mr. Street will live in Holyoke.

The annual meeting of the Valley Paper Company, of which ex-Postmaster Prescott is treasurer, will be held to-day. It is not expected that there will be a change in the officers.

Up in Dalton the mills are running with a fair number of orders, and Byron Weston's mill is turning out the usual amount of paper. Business in that little village is somewhat better than in Holyoke. The Cranes are doing a fair business with their fine writing papers. H.

GREAT BRITAIN.

[FROM OUR REGULAR CORRESPONDENT.]

LONDON, January 8, 1895.

Last night the parliamentary return of imports and exports for the whole year 1894 was issued. The total imports for the twelve months amounted to £408,505,718, an increase of £3,817,540 on the previous year. On the other hand, although the monthly returns for the last three months show an appreciable gain in shipping business, the exports are yet behindhand on the year. The total was £216,194,239, a decrease of £1,900,626. In articles closely concerning our trade the following are the figures:

EXPORTS—(VALUES IN POUNDS STERLING.)

Writing or Printing, and Envelopes.	1892.	1893.	1894.
To France	72,817	58,763	56,512
United States	28,740	28,310	31,327
British Possessions in South Africa	61,020	63,637	79,854
British East Indies	172,335	174,251	128,822
Australasia	525,827	439,773	408,244
Brit. N. America	54,872	49,502	40,910
Other countries	215,437	232,595	202,020
Total	1,131,558	1,044,781	947,689
Hangings	148,490	140,905	137,942
All other descriptions.			
To France	40,509	40,904	39,103
United States	32,076	30,229	45,881
British Possessions in South Africa	28,982	30,613	28,410
British East Indies	28,357	28,155	22,557
Australasia	84,114	68,928	97,805
Brit. N. America	10,147	11,118	9,601
Other countries	75,561	78,647	84,502
Total	299,646	288,594	327,859
Total of Paper	1,579,694	1,474,280	1,413,490
Rags (except woolen) and other materials for making paper	401,889	361,542	309,181
Alkali to United States	1,348,351	1,017,169	764,920
To other Countries	871,089	840,759	864,859
Total	2,119,440	1,857,928	1,629,779
Bleaching Materials or preparations.			
To United States	382,076	334,141	311,071
Other countries	216,573	216,559	193,838
Total	598,649	550,700	504,909

As far as quantity exported is concerned, the figures do not show such a diminution. In alkali, for instance, a larger quantity was exported in 1894 than in 1892, which shows what a fall in values there has been in the stuff of late years. The heaviest loss of trade in shipments of paper is to Australasia and the East Indies, where new paper machines are started up every year, and where, in news at any rate, our Lloyds and Owens feel more and more the sharp point of American competition. Also for official purposes India is using much of her own paper, which improves in quality constantly. Less than five years back the Indian Government refused, and had a right to refuse, to touch native produce. Now for the other side of the slate.

Following is the report as to

IMPORTS—(VALUES IN POUNDS STERLING).

	1892.	1893.	1894.
For Printing or Writing.			
From Germany	126,108	77,000	84,889
Belgium	80,646	87,748	90,464
Holland	49,285	75,044	64,959
Sweden	98,475	96,239	104,044
Other countries	71,214	105,070	154,398
Total	425,928	435,161	498,754
Other kinds (except Hangings).			
From Germany	546,722	451,166	540,379
Belgium	199,175	222,475	221,213
Holland	574,464	591,517	646,320
France	79,536	76,173	81,251
Other countries	546,983	536,820	641,589
Total	1,946,630	1,878,151	2,130,752

You will remember that a few weeks ago you commented upon the want of details in the item "Other Countries," and expressed a belief that the British authorities had no desire to flatter America by giving fuller particulars of the country of origin of these exports. You must remember, however, that the Parliamentary order for the reports was issued long before the beginning of last year, and that once a fixed and exact table is adopted it cannot easily be departed from. However conservative you may think John Bull to be in these matters, you cannot deny that he gets his balances out quicker than any other nation. I calculate that this enormous and very precise statement of last year's shipments to and fro has been put together in four and a half working days. However, an opinion expressed in THE PAPER TRADE JOURNAL is worth following up, and I write to the Board of Trade to-day calling their attention to your remarks, and asking them to at least give details in future of shipments of paper into British ports from the United States. A year or two ago I was instrumental in procuring a somewhat similar variation in the returns, and I can be sure at least of a courteous answer.

As I have said already, even since last year the prices of many descriptions of paper shipped abroad have fallen considerably, so that before an equal value of shipments could be shown actually a much increased bulk of business had to be done. Consequently, in one way of looking at it the figures above are not quite so bad as they seem. If, moreover, the papermaker has been taking smaller prices, he has been giving less and less for raw material, almost all round, as the year progressed. Between the first and last month of the year the fall in cost shows very clearly. The best procurable Spanish esparto in January was quoted at £5 15s., in December at £5. Ordinary African qualities do not show quite so heavy a fall, but a fair average grade which fetched £3 10s. in January is now sold at £3. Straw pulp also came down in price. The best brand of bleached sulphite was quoted in January at £18 10s., and at £17 in December, first quality unbleached in the same months falling from £13 10s. to £11. Other chemical pulps cheapened in about the same ratio. Mechanical pulps also fell in spite of the predictions at the beginning of the year that prices would considerably harden. Dry pine in sheets, quoted in January at £6 10s., dropped to £5 before the end of the year, and 50 per cent. air dry from £3 5s. to £2 10s.

In this market the year was noticeable from the fact that American spruce made its first appearance in dealers' regular quotations. It is put slightly higher than other pine pulps, and has established itself as a favorite whenever circumstances allow it to be sold freely in the British markets. Rags have shared the declines in values, and this is most noticeable in the best grades. The finest white cuttings have fallen quite £2 per ton, and best quality "out shots" (English) have come down from £13 to £10 in the twelve months. The more important items in the way of chemicals have also fallen from their high estate. Bleach at £7 10s., and soda (77 per cent.) at £11 10s., are now at £7 and £10 10s. respectively. Antichlor, however, has advanced a little.

There is talk of a regular daily mail service between England and the States. You know that our stupid arrangement at present is to send off three liners carrying mails on Wednesday and three on Saturday. It is absurd that the Southampton and Liverpool boats should leave on the same day, and it is to be hoped that the jealousy of the companies will not prevent a better arrangement. Last Thursday the new system of accelerating the dispatch of American passengers and luggage for London and the South from Liverpool was brought into operation. In the case of the Lucania, after a rapid passage from New York, the Cunard Company put forth its best energies, the result being that in less than an hour and a half after the steamer had dropped anchor all luggage was clear of the customs in time for the 4.05 P. M. train from Lime street to London. For the first time in the Atlantic trade the cargo of a steamer leaving New York on one Saturday was reported in the Liverpool Customs Bill on the following Saturday, which again is quick work.

I called on Kendall Robinson concerning the book, news and stationery exhibition to be held at Westminster at the end of this month, and found that the show will be much bigger than expected. Mr. Robinson remarked that "in an exhibition in which three such trades take part there must be plenty of 'features.'" However, some of the most interesting displays may be traceable to allied callings. Thus we shall have bookbinding in all its stages executed on the premises, the production of blocks used for engravings by every known process, an extensive collection of original drawings by the best artists in black and white, the strangest devices for advertising, numerous displays calculated to give the public an insight into the production of stationery and adjunctive fancy goods, and other striking novelties that many of those firms which have already engaged floor space intend to arrange. The news trade will be largely represented, and one of the smartest of our halfpenny evening papers will be responsible for an exhibition in itself, which will give visitors a vivid idea not only of the mechanical processes laid under contribution in the production of an evening journal, but also of some of the mysterious functions associated with the sub-editor's sanctum. I understand also that the Linotype Company will show its machine in actual work.

Yet a little more about the starting of pulp mills in France. Very exact information concerning the scheme has now been put into the hands of the deputy for the Vosges, and from this report I extract the following details. The French paper makers use about 130,000 tons of dry pulp per year, representing say 25,000,000 feet or so of timber. The duty paid on this at the ports of entry amounts to about $4,000,000. The necessary quantity of wood could easily be provided for home requirements, but there is too little water power for mechanical pulping and the notion is to convert the trees into cellulose. It is allowed that the quality of the pulp would not be good enough for fine papers, as the inferiority of the wood, and in particular the large amount of iron it contains, will prevent a good bleach, yet it will serve excellently well for wrappings, wall papers or even for news, and in this connection it is just as well to remark that no nation seems to be so easily content with the quality of paper used for daily journals as the French. It is proposed for a start to establish a pulp mill costing $100,000 to $120,000, and it is estimated that this would use up from 25,000 to 35,000 steres of timber per year (a stere is 35⅓ feet), and easily pay about $2 per stere for lumber barked and delivered at the mill. As wood for pulp may be young and ill grown, this price will pay the forest proprietors, and the proximity of the district to Paris would give a good market close at hand. When I first expressed an opinion that France would soon rank among pulp producing countries, an English journal smiled mildly, but I know something of the district, and I believe now that the forest proprietors will never rest until so feasible a scheme is an accomplished fact.

ALFA.

Sulphite Fibre Manufacture—II.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY SANFORD E. THOMPSON.

There are as many methods of getting the wood into the wood room as there are mills, and the proper machinery for this must be determined in all cases by the location of the mill and its surroundings. Various styles of endless chains are perhaps the most common and the most efficient means for handling the wood, but nearly every form of carriage from horses to hydraulic cranes has been tried. One mill has excavated an artificial basin in the centre of the wood yard, and filled it with water from the canal. A track runs into the water, and whenever a load of wood is needed a car is run down under water and the sticks are floated on to it. When full the car is hauled by power into the wood room.

The cross-cut saw should in all cases have a capacity greater than the remainder of the machinery of the wood room, in order that there may be no waiting for bolts. If the saw does not cut as fast as the bolts can be taken care of every man on all of the other machines loses a certain amount of time.

Great care must be used in barking to see that every particle of the inner bark is removed, for this bark is so soft that it will appear in the finished sheet as brown specks, no matter how carefully the pulp is screened and washed. The cost of barking depends in a great degree upon the diameter of the bolts. Sticks about 7 or 8 inches in diameter can be barked much more cheaply than either larger or smaller wood. The cost of barking wood of this size should not exceed 22 cents per cord. In some mills, where slabs and edgings are used, horizontal barkers with short knives are employed, and the pieces of wood are run back and forth over them. The ordinary upright barker when properly arranged can be made to bark even this small stuff faster than can be done with the horizontal machines.

When an upright barker is used for this kind of wood the upper part of the case in front of the knives must be entirely removed. A stop is fastened on the side farthest from the operator, so that he can run the sticks up against it when barking. Another good arrangement which will lessen the chance of accident is a slide upon the table of the barker which works at right angles to the barker and presses the wood against the knives. This may be operated by the man who runs the machine with his left hand while his right hand holds the end of the stick to be barked. It avoids pressing the stick against the knives with the bare hand. Every barker should be provided with tight and loose pulleys, in order that the knives may be changed without running off the belt. These loose pulleys must be kept well oiled.

The amount of labor which may be expended in removing knots depends entirely upon the quality of fibre wanted and upon the machinery in the wash room. Sound white knots can be taken out after the pulp reaches the wash room, provided they have not been cooked too soft. Where an extra quality of bleached pulp is desired all dark knots should be carefully removed in the wood room, and unless the wash room is especially arranged to take care of them the white knots also.

There are two methods of cutting up wood after it is cleaned. In the original Mitscherlich process the bolts are cut square across the grain into disks 1¼ inch thick. This is done sometimes by common circular saws or by shingle saws, but more often with some kind of a gang saw. The gang saws are made with a number of circular saws on a single arbor; the bolts, in lengths of about 2 feet, are caught by curved fingers and pulled through these saws. In some machines the fingers run horizontally back and forth, but the later styles are provided with several sets of revolving fingers. One gang saw can be run to cut 70 cords of wood per day. Only the Mitscherlich mills cut their wood in this shape, and even in several mills using this process chippers have been introduced. One of the principal advantages of the disks is that a much larger amount of wood can be gotten into the digester at each cooking. On the other hand there is a much larger waste on account of the sawdust made, the waste from sawdust alone amounting to at least 10 per cent. A greater length of time also is required for cooking blocks. Where chippers are employed the waste from sawdust and slivers, which have to be picked out of the chips, should not be over 1 per cent.

Chippers require frequent and careful sharpening of the knives, and these knives for the highest grade of fibre should be set so that the chips will measure five-eighths of an inch long. When small or thin pieces of wood are run into the chippers, quite a large amount of slivers is made, for the pieces work back of the knives without being cut up. A poor grade of fibre may sometimes be traced to this cause. To separate these coarse pieces, one method employed is to allow the chips to fall upon an endless apron, beside which one or two men or boys are stationed. The apron should be made so that it can be quickly stopped by the operators in case an unusually large number of chips come along at once.

The sawdust should be separated from the chips before passing to the digester room. A revolving screen is sometimes used for this, constructed as shown in Fig. 1. The screen is cylindrical in shape and

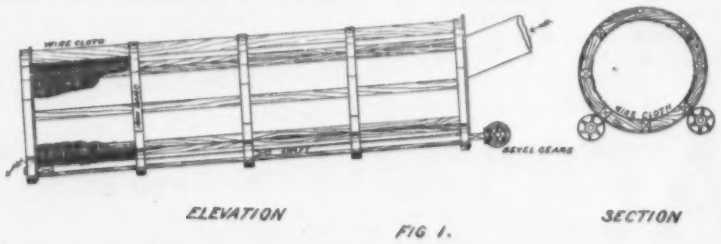


FIG 1.

covered on the inside of the frame with one-quarter inch mesh wire cloth. The axis should be inclined so that the chips will run through without clogging. To avoid any spokes, which would tend to collect the chips and block them up as they pass through, the screen may be revolved as shown by resting it upon several small pulleys placed on two shafts parallel to the axis of the cylinder.

From these screens the chips are carried or blown to the bins over the digesters.

These bins should be constructed with

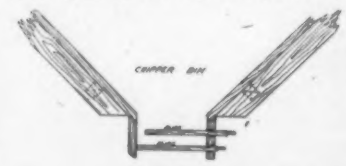


FIG 2.

bottoms having so steep a slope that the chips will run out from them with a small amount of handling. In Figure 2 is shown a method of stopping the chips when running them into the digester, which I have seen very satisfactorily employed. Instead of trap doors or a single slide, two slides are arranged, one above the other. When the chips are to be shut off, the upper slide is shoved in and stops the chips, but does not tightly close the opening, because chips are caught between it and the slide. It is important, however, to shut this entirely to prevent the chips which are thus caught from gradually working loose and falling onto the floor and upon the digesters, when jarred or accidentally touched. The lower slide prevents this, as it can be shut perfectly tight.

One machine in the wood room which is liable to give a great deal of trouble unless it is properly designed is the blower for carrying off the shavings. A great many mills find it convenient to blow the shavings directly to the fire room for use in the boilers. When this is done the capacity of the fan should be large enough to readily take care of all the waste, and the belt must be powerful enough to drive it easily. Of course we may say that manufacturers of the blower ought to know their own business and construct so comparatively a simple machine as a fan of a pattern which will run satisfactorily, yet a serious defect in many of the patterns of blower is found in the width of the pulley and the diameter of the shaft. The pulley must necessarily be of small diameter in order to give the requisite number of revolutions per minute, and consequently the belt will have a small arc of contact. It will need on this account to be wider than where the pulleys are the same size, or it will require frequent shortening. The shaft which runs through the blower will give no trouble from heating if it is of large enough diameter and is properly cared for. The neglect of either of these points is very dangerous to the safety of the mill, as hot boxes in the wood room are a frequent source of fire. The bearings for the fan shaft should also be of good length. These remarks apply to the chipper blowers as well as to shaving fans.

In a great many branches of manufacturing piecework has been introduced with signal advantage, and many of our largest manufactories have the most of their work done in this way. Many of the fibre mills abroad, and at least one in this country, are operated almost entirely on piecework. How satisfactory this has been I do not know, but there are at least certain parts of a sulphite mill into which it may be introduced to good advantage. I have in mind more particularly the barkers in the wood room. If the machines in the wood room are properly arranged, it is a comparatively easy matter to measure the amount of wood barked or cleaned by each man. While more careful inspection is required by the foreman to see that the work is properly done, less of his time is required in hurrying the men and watching to see that they do a full day's work. The men will make higher days' pay than under ordinary circumstances, and will bark more wood for the same amount of money paid them.

(To be continued.)

Lacing should not be crossed on the side of the belt which runs next to the pulley.

Where exposed to the atmosphere or in damp places, it is found that the higher the tensile strength of steel the more rapidly it corrodes. It is therefore desirable to make steel as soft as possible in bridges, standpipes, &c., where there is tendency to rust. This would not apply to steel plate for boilers.

Machine for Coating Paper.

An illustration is given of an improved paper coating apparatus designed for applying paraffine or other waterproofing material to the surface of paper.

Figure 1 is a sectional elevation taken on line x, x of Fig. 3, showing the device complete in connection with a stack of calender rolls, the latter being shown simply in diagram without their framework or mountings; Fig. 2, a broken front elevation of the same, but omitting the stack of calender rolls; and Fig. 3, a plan of the machine, the top guard or fender being broken away in several places to show the brush and its bearing at one end, and the calender rolls being also shown in dotted lines only, to avoid obscuring the view to any of the parts.

A represents each of the two side supporting frames, having a connecting cross-bar or stay B.

C is a rotary cylindrical brush, bearing brackets, c, secured at the upper fore-ends of frames, A, and provided with a driving pulley, c'.

D is a forwardly projecting fender or guard, over the brush C, its opposite ends being suitably secured to the top of frames, A.

E represents a down chute, suitably mounted between the said two side frames, and provided with a hopper shaped top, e, disposed under the brush. e' is a box or other receptacle under the chute E.

F represents an upper clamp bar and F' a lower clamp bar, between whose inwardly lipped fore edges, f and f', respectively, a longitudinal bar or block, G, composed of paraffine or other similar waterproofing material, in a solid state, is firmly held, a pair or more of screws, a, having thumb nuts, a', being used to unite the clamp bars over the paraffine bar, as best seen in Figs. 1 and 3.

a^2, a^2 represent pins projecting from the opposite ends of the lower clamp bar F' into longitudinal slots or ways, a^3, made in the side frames A, these slots being shown in dotted lines in Fig. 3.

b, b represent rods or bars projecting rearwardly from the lower clamp bar F', and taking through slide boxes, b', on the crossstay B. These rods are screw threaded at their outer ends to accommodate hand wheels or nuts, b^3, suitable cushions or elastic washers, b^3, being first placed on the rods ahead of the hand wheels, as best seen in Figs. 1 and 3.

B', B' are spiral springs surrounding the rods b, between the clamp and cross stay, and having their expansive action controlled by the hand wheels, which latter are run up and down on the rods to bring the working face of the paraffine bar into proper contact with the face of brush C.

H, h, h', h^2, and H' represent the several rolls in a vertical series or stack of ordinary calender rolls used in connection with a paper making machine. A continuous strip of paper is shown leading from any source of supply, such as a continuous roll, or the paper making machine, preferably the latter, and thus in the original course of manufacture, the arrows adjacent thereto and in connection with the calender rolls indicating the direction of movement thereof.

The machine is arranged just ahead of the calender rolls, with its rotary brush C in contact with the paper as it passes over one of the first rolls—say roll h—the latter forming a backing or foundation against which the bristles of the brush may properly bear in applying the paraffine.

In the operation of the machine, the paper travels down through the stack of calenders as usual, but when it reaches, say roll h, one side of it is treated to a coating of paraffine or other suitable waterproofing material through the instrumentality of the transverse, rotary cylindrical brush C, the latter being charged from a transverse bar or block of paraffine against which it revolves in intimate contact. The bristles in the face of the brush are preferably moderately stiff, in order to properly take only a very small quantity of the paraffine from the face of the solid block or bar G, and likewise deposit or apply it to the surface of the passing paper. By making the bar of paraffine movable toward and from the brush, and having the brush remain at the same distance from the roller or surface of the paper, the amount of material applied to the paper can be regulated by simply adjusting the position of the material relatively to the brush. The brush C revolves in an opposite direction to that of the advance movement of the paper and at somewhat greater surface velocity, so that the paraffine carried on its face shall be both deposited upon the paper and rubbed into or given the desired surface.

The surface or polish of the material upon the paper is also increased by applying pressure to the paper after the application of the material, as, for instance, by passing the paper between the remaining rolls of the stack, as shown. The block of paraffine is preferably held up to its work against the brush in a yielding manner by means of the rods b and expansion springs B', the hand wheels on the rods being turned in the desired direction to make due allowance for the width or depth of the paraffine bar, and for its consumption or wearing away in the work. The lateral pins a^2, playing in the slots a^3, properly support the clamp bars and enable them to be adjusted in either direction forwardly or rearwardly, without hindrance, to suit the condition or size of the paraffine bar. The elastic washers b^3 are provided on the rods b for cushioning the clamps and the paraffine bar against reaction after any compression of the springs B'. The hand wheels and the spring-controlled rods facilitate the adjustment of the paraffine bar, giving it the proper pressure against the brush at all times and presenting it uniformly thereto. It is obvious that one or more sets of hand wheels and spring rods, and also one or more clamp screws, can be placed intermediate to those on the crossbar or stay and clamp bars, respectively, where the paper is made in great width.

The device is said to be especially adapted to the waterproofing of straw paper for wrapping purposes, but it is evident and intended that it may and shall be used in waterproofing manilla and other papers, printed labels, and other fabrics and suitable materials desired to be so surfaced.

It is obvious that the brush may be mounted in ordinary adjustable bearings, to make due allowance for any wear of the bristles. The fender D is provided to prevent upward escape of any fine particles or powder arising from the contact of the brush with the paraffine bar; and the down chute E, e is also provided to convey such powder to the receptacle e' below, from whence it may be removed to be remelted and cast into blocks or bars for use again, thus preventing accumulations under the machine, and especially any waste.

Other materials than paraffine may be used in the solid state in this machine, for waxing or waterproofing purposes, and a revolving brush, having moderately stiff, or even stiff, bristles can be employed to remove, carry and deposit the material in a thin film on the surface of paper or other fabrics.

The other side of the paper can be waterproofed with a thin film or paraffine from a solid bar or block by means of the brush and accompanying devices duplicated or placed on the fore side of the calender stack, with the brush in contact with the paper as it passes downward over the roll h'.

Fig. 1

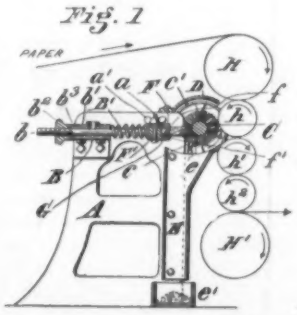


Fig. 2.

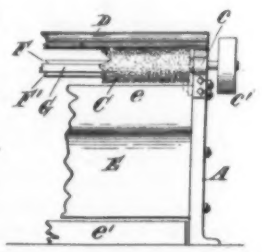
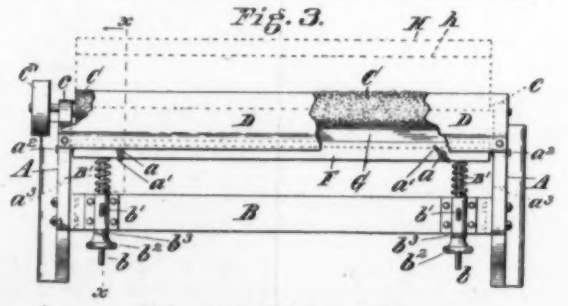


Fig. 3.



MACHINE FOR COATING PAPER.

The following is proposed as a simple method of testing leather used for belting. A small piece is cut out of the belt and placed in vinegar. If the leather has been perfectly tanned, and is therefore of good quality, it will remain immersed in vinegar, even for several months, without any other change than becoming of a little darker color. If, on the contrary, it is not well impregnated with tannin the fibres will promptly swell, and after a short time be converted into a gelatinous mass. This simple test may save you money and trouble.

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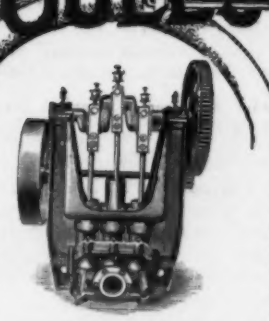

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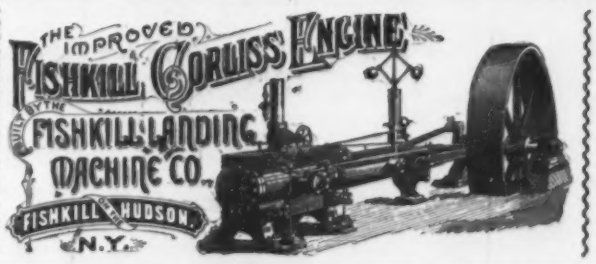

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IMPORTS AT NEW YORK.

FOR THE WEEK ENDED JANUARY 18, 1895.

An. Colors..	912	$62,173	Paper.....	953	$28,599
Alum.....	—	—	Steel Pens...	6	7,250
Alum's Cake	—	—	Stationery...	8	267
Bl. Powders	549	9,196	Slate Pencils	266	1,186
Soda Ash...	12,688	29,659	Clay.....	—	2,293
Soda, Caus.	336	4,528	J'te B'ts, &c.	500	1,845
Soda, Sal....	700	1,520	P. Hangings.	46	1,815
Soda, Hypo.	264	346	Pap'r Stock..	7,658	60,315
Ultramarine	115	4,341	Terra Alba..	264	354
Books.....	193	19 699	Waste.....	100	17,628
Newspapers.	188	7,542	Wood Pulp..	1,019	9,724
Engravings.	117	8,460			
Ink.....	10	199			
Lead Pencils	9	1,428	Totals....	26,835	280,362

Imports General Merchandise for the week ended January 18, 1895..... $7,860,280

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO JANUARY 23, 1895.

Whence Imported.	Rags.	Old Papers.	Chemical Fibre.	Ground Wood.	Manilla Stock.
	Bales.	Bales.	Tons.	Tons.	Bales.
Antwerp.....	....	....	....	....	1,837
Bremen.....	23	....	....	....	370
Copenhagen..	....	....	105	....	....
Genoa.....	202	....	....	....	250
Hamburg.....	1,463	....	117	....	77
Hull.....	27	....	70	....	165
Leghorn.....	....	....	....	....	185
Liverpool.....	119	23	....	....	201
London.....	234	....	....	....	134
Newcastle....	....	....	....	....	191
Rotterdam....	108	....	45	....	....
Stettin.....	401	....	....	....	486

NEW YORK IMPORTS.

FROM JANUARY 16 TO JANUARY 23, 1895.

Paper Stock.

Train, Smith & Co., Lepanto, Antwerp, 691 bs. bagging.
James Pirnie, by same, 510 bs. bagging.
Jessup & Moore Paper Company, Fulda, Genoa, 202 bs. cotton waste.
F. Bertuch & Co., Colorado, Hull, 20 tons chemical fibre.
G. Rau, by same, 50 tons chemical fibre.
Castle & Gottheil, Victoria, Leghorn, 185 bs. bagging.
Castle & Gottheil, Lydian Monarch, London, 114 bs. rags.
R. H. Overton & Son, Critic, Newcastle, 191 bs. bagging.
Train, Smith & Co., Thingvalla, Stettin, 91 bs. rags.
Lewy Brothers, by same, 54 bs. rags, 274 bs. bagging.

Paper.

C. D. Stone & Co., Lepanto, Antwerp, 38 cs.
Hermann Schulte & Co., by same, 17 cs.
O. G. Hempstead & Co., by same, 24 cs.
W. Seyd, Waesland, Antwerp, 11 cs.
J. Campbell & Co., by same, 4 cs.
L. C. Wagner, by same, 3 cs.
Dresden Photo Paper Works, by same, 10 cs.
G. W. Sheldon & Co., by same, 50 cs.
G. Gennert, by same, 1 cs.
Henry Bainbridge & Co., by same, 3 cs.
C. S. Abbott, by same, 24 cs.
J. Dickerson & Co., Lucania, Liverpool, 6 cs.
Dennison Manufacturing Company, by same, 94 cs.
American Trading Company, La Bourgogne, Havre, 52 cs.
McDowell & Co., by same, 14 cs.
H S. Leclercq & Co., Edam, Rotterdam, 4 cs.
Knauth, Nachod & Kuhne, by same, 6 cs.
E. & H. T. Anthony & Co., by same, 3 cs.
L. De Jonge & Co., by same, 10 cs.
Dingelstedt & Co., by same, 22 cs.
Kupfer Brothers, by same, 8 cs.
R. F. Downing & Co., Stuttgart, Bremen, 15 cs.
Jos. Bacharach, by same, 31 bs.

BOSTON IMPORTS.

FROM JANUARY 17 TO JANUARY 22, 1895, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Cephalonia, Liverpool, 6 bs. periodicals.
Irving & Casson, by same, 3 cs. paper hangings.
Gregory & Brown, by same, 3 cs. paper hangings.
J. Dickinson & Co., by same, 9 cs. paper.
Stone & Forsyth, by same, 2 cs. paper.
Dennison Manufacturing Company, Michigan, Liverpool, 2 cs. and 8 bs. tissue paper.
John Strahan, Georgian, Liverpool, 1 cs. paper hangings.
J. Dickinson & Co., by same, 18 cs. paper.
Dennison Manufacturing Company, Cambroman, Liverpool, 9 bs. tissue paper.

Paper Stock.

Train, Smith & Co., Borderer, London, 2,158 bs. rags, 303 bs. manillas.
C. A. Cheney, by same, 125 bs. waste paper.
Horace Dutton & Co., by same, 116 bs. rags, 142 bs. waste paper, 80 bs. flax waste.
Wheelwright Paper Company, by sam 265 bs. waste paper.
C. P. Sumner & Co., by same, 112 bs. waste paper.
Order, by same, 134 bs. flax waste.
Train, Smith & Co., Otranto, Antwerp, 653 bs. rags, 270 bs. flax waste.
Castle & Gottheil, by same, 320 bs. rags.
Horace Dutton & Co., by same, 307 bs. rags.
G. W. Millar & Co., by same, 145 bs. manillas.
C. A. Cheney, Cambroman, Liverpool, 125 bs. rags.
Horace Dutton & Co., by same, 75 coils manillas.
R. H. Overton & Son, by same, 114 bs. manillas.
C. A. Cheney, Columbian, Liverpool, 255 bs. rags.
C. A. Cheney, Georgian, Liverpool, 147 bs. rags.
Train, Smith & Co., Parkmore, London, 323 bs. rags.
Horace Dutton & Co., by same, 344 bs. rags.
R. H. Overton & Son, by same, 178 bs. manillas.
Train, Smith & Co., Buffalo, Hull, 654 bs. rags, 29 bs., 136 coils manillas.
C. A. Cheney, by same, 85 bs. manillas.
Atterbury Brothers, by same, 443 bs. rags.
Train, Smith & Co., Siberian, Glasgow, 95 bs. waste paper.
Train, Smith & Co., Ottoman, Liverpool, 259 coils manillas.
C. A. Cheney, by same, 5 bs. rags, 39 bs. waste paper, 16 bs. manillas.
Horace Dutton & Co., by same, 100 coils manillas.
R. H. Overton & Son, by same, 164 bs. manillas.
Train, Smith & Co., Michigan, Liverpool, 76 bs. rags, 175 bs. manillas.
C. A. Cheney, by same, 27 bs. rags, 43 bs. waste paper, 212 bs. manillas.

Wood Fibre.

Fred. Bertuch & Co., Buffalo, Hull, 160 bs.
Page, Newall & Co., by same, 102 bs.
R. Helwig, Parkmore, London, 811 bs.
W. N. Proctor & Co., Bruxelles, Hamburg, 633 bs.

Sizing.

Train, Smith & Co., Cambroman, Liverpool, 360 bags.
Baeder, Adamson & Co., by same, 65 bags.
C. A. Cheney, Buffalo, Hull, 113 bags.
C. A. Cheney, Ottoman, Liverpool, 143 bags.
C. A. Cheney, Michigan, Liverpool, 88 bags.
E. W. McClintock, Cephalonia, Liverpool, 501 bags.
Thomas Groom & Co., by same, 78 bags.

Bleaching Powder.

J. L. & D. S. Riker, Michigan, Liverpool, 297 cks.
J. L. & D. S. Riker, Ottoman, Liverpool, 364 cks.
J. L. & D. S. Riker, Columbian, Liverpool, 94 cks.
J. L. & D. S. Riker, Cambroman, Liverpool, 531 cks.
Linder & Meyer, by same, 23 cks.
Mason, Chapin & Co., Otranto, Antwerp, 48 cks.
Jerome Marble & Co., Georgian, Liverpool, 19 cks.
Fuerst Brothers, Buffalo, Hull, 53 cks.
Bowman, Thompson & Co., Cephalonia, Liverpool, 69 cks.

Caustic Soda.

Edward Hill's Sons Company, Georgian, Liverpool, 375 drums.

Soda Ash.

Wing & Evans, Columbian, Liverpool, 96 cks. and 800 bags.
Morey & Co., by same, 14 cks.
Wing & Evans, Georgian, Liverpool, 44 cks. and 900 bags.
Warren & Co., Cambroman, Liverpool, 14 cks.
Warren & Co., Ottoman, Liverpool, 74 cks. and 200 bags.
Churchman & Co., by same, 17 cks.
Warren & Co., Michigan, Liverpool, 37 cks. and 198 bags.
Wing & Evans, by same, 52 cks.

Refined Alkali.

J. L. & D. S. Riker, Columbian, Liverpool, 90 cks.

Soda Crystals.

Jerome Marble & Co., Georgian, Liverpool, 140 bbls.

Crude Sulphur.

Linder & Meyer, Georgian, Liverpool, 1,002 bags.
Linder & Meyer, Columbian, Liverpool, 1,002 bags.

Twine.

Stone & Forsyth, Cephalonia, Liverpool, 2 bbls.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED JANUARY 19, 1895.

Paper Stock.

Philadelphia Shipping Company, Maryland, London, 350 bags.

Caustic Soda.

E. Hill's Sons & Co., Maryland, London, 100 drums.

Soda Ash.

Brown Brothers & Co., Indiana, Liverpool, 134 pkgs., 1,534 bags, 30 cks.

Soda Crystals.

J. I. Keefe, Indiana, Liverpool. 202 bbls.

EXPORTS of Paper, &c., from New York for the Week Ended January 22, 1895.

BOOKS, cases, to Antwerp, 3; Argentine Republic, 1; British East Indies, 10; British Australasia, 2; Berlin, 2; Brazil, 17; Bremen, 9; Cuba, 5 pkgs.; Hamburg, 4; Havre, 4; Lisbon, 2; Leipsic, 2; London, 26; Liberia, 6; Liverpool, 1; Mexico, 1; Naples, 2.

PAPER, to Antwerp, 165 pkgs.; Azores, 4 pkgs.; Argentine Republic, 3 cs.; British Australasia, 274 pkgs.; Bremerhaven, 25 cs.; British West Indies, 275 pkgs.; British Guiana, 643 bdls.; Brazil, 115 pkgs.; Cuba, 98 pkgs.; Copenhagen, 11 cs.; Central America, 4 cs.; Ecuador, 2 cs.; Danish West Indies, 101 pkgs.; Glasgow, 52 cs.; Hamburg, 86 cs.; Hayti, 11 pkgs.; London, 490 pkgs.; Liverpool, 9 cs.; Mexico, 204 pkgs.; Sandwich Islands, 447 pkgs.; Colombia, 62 pkgs.

STATIONERY, cases, to Argentine Republic, 4; British Australasia, 1; Berlin, 2; British West Indies, 18; British Guiana, 9; Brazil, 23; Cuba, 16 pkgs.; Central America, 6 pkgs.; Danish West Indies, 2; French possessions in Africa, 1; Gothenburg, 1; Hamburg, 20; Hayti, 7; Havre, 8; London, 17; Liverpool, 6; Mexico, 31; New Zealand, 1; Sandwich Islands, 1; Colombia, 8; Antwerp, 13.

TWINE, to Argentine Republic, 25 cs.; Cuba, 1 bale; Central America, 3 bs.; Bristol, 90 pkgs.; Danish West Indies, 1 bale; Hayti, 2 pkgs.; Brazil, 10 bs.; Hull, 90 bags; Mexico, 1 bale; Sandwich Islands, 11 bs.; San Domingo, 2 bs.; Uruguay, 2 bs.; Colombia, 9 bs.

CARDBOARD, cases, to Brazil, 1.

WALL PAPER, cases, to British Australasia, 3; Hayti, 1.

CARDS, cases, to Brazil, 4.

SANDPAPER, to London, 14 bdls.; Mexico, 5 bdls.; British Australasia, 3 cs.; British West Indies, 1 bdl.; Intra, 11 bs.; Brazil, 8 pkgs.; Manchester, 32 bdls.; Sandwich Islands, 2 cs.; Uruguay, 1 cs.; Colombia, 2 bs.

TAGS, cases, to Mexico, 1.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs.....	2,488	$10,965
Paper, cases.....	143	2.814
Books, cases.....	93	5,989
Stationery, cases.....	171	14,392
Rosin, bbls.....	2,706	8,409
Totals.....	5,601	$42,569

Exports General Merchandise for the week ended January 22, 1895..... $9,788,484

Process of Treating Sulphite Fibre.

In the manufacture of sulphite fibre after the wood has been digested and washed with water, there is found a certain amount of pitchy or resinous matter, which is not perfectly soluble in water, but which adheres more or less to the wood fibres in very minute particles and also to those vessels or other parts of the machinery in which the fibres are being treated, eventually forming thereon a black coating of a pitchy nature, which becomes smeared or rubbed off the surface by the action of the moving fibre and forms dirty specks which deteriorate the value of the fibre. This insoluble matter is not in the wood itself, nor visibly present in the fibre when digested, but appears to be a by-product developed when the fibre is submitted to the opening process in which the fibres are rubbed together.

In order to prevent the formation of these partly insoluble specks in the fibre, and the partial coating of the vessels or parts of the machinery with the pitchy or resinous matter, petroleum or paraffin oil (or other suitable hydrocarbon) is added to the partly washed fibre in sufficient quantities to render soluble the minute particles of pitchy or resinous matter, which may then be washed out in the usual way. The proportion of petroleum or paraffin oil used for this purpose is about 6 to 8 quarts to 1 ton of air dried fibre. If the boiling has been carried on a long time in the digester it requires a little less oil than when the fibre has not been so well boiled, but the proportion given is about the average quantity required per ton.

By this means the vessels and other machinery used in the washing, cleansing and treating of sulphite fibre can be kept perfectly clean and free from the objectionable coating of the pitchy or resinous matter, and the purity and quality of the fibre will be greatly improved.

The method of applying the oil can be varied to a considerable extent. For example, it can be added when the fibre is passing through the "opener" by dropping in the oil as the fibre enters, after which it is well mixed and comes in contact with and dissolves the pitchy or resinous matter; or the oil may be added in given proportion to quantities of fibre put into the washing engines, cisterns or the like, with the object of mixing and triturating the same.

The oils used for the purposes are mineral hydrocarbon oils such as petroleum or paraffin (either crude or refined), preferably of a specific gravity of .800 to .850 and with a flashing point of from 80° to 120° Fahr.

This process is patented.

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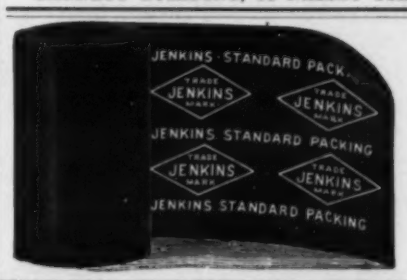

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HOWARD LOCKWOOD & CO.,

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NEW YORK: SATURDAY, JANUARY 28, 1895.

LOCKWOOD PRESS BUILDING.

Northwest corner of Bleecker street and South Fifth avenue, New York, adjoining the Bleecker Street Station of the Sixth Avenue Elevated Railroad.

THIS number of THE PAPER TRADE JOURNAL is issued from our new location with no delay or interruption to our work.

PART ONE (72 pages and cover) of HOFMANN'S TREATISE ON PAPER MAKING is now in the hands of subscribers. There will be twenty parts altogether, aggregating about 1,600 pages, with nearly 1,500 illustrations. The remaining nineteen parts will appear at intervals of not less than sixty days. The price is one dollar, cash in advance, for each part, postpaid. Orders will be filled in rotation as received.

THE CHEMISTRY OF PAPER MAKING is now on the market; octavo, 532 pages, cloth, $5.00, postpaid. Any reader of THE PAPER TRADE JOURNAL interested in the subject could not make a better investment of the money. Particulars in another column.

THE AMERICAN DICTIONARY OF PRINTING AND BOOKMAKING will be delivered to any person sending twelve dollars for it. This great work, royal octavo, 600 pages, half-bound, is a mine of information on every subject comprehended by its title.

HOWARD LOCKWOOD & Co.

THE apparatus illustrated and described on the first page of this issue of THE PAPER TRADE JOURNAL is designed for the electrolytic decomposition of the chlorides of metals for the purpose of producing caustic soda, &c. This is only another of the numerous machines of its class which have been the subject lately of patents, and is another indication of the close attention which is being given to the production of paper making chemicals on a cheaper scale.

THE midwinter meeting of the American Paper Manufacturers' Association will be held in New York on Wednesday next. The preparations which have been made for this event indicate that the session will be of more than ordinary interest, and we hope that the paper trade of the country, far and near, will be fully represented. There are many subjects of interest to the paper making industry which deserve consideration, some of which, in view of the recent organization of the National Manufacturers' Association at Cincinnati, call for careful consideration and attention.

IF anything needful is lacking to demonstrate how little the present Congress understands the temper of the people, or, understanding it, how utterly indifferent it carries itself, the want is supplied by the partial restoration of the franking privilege by a paragraph smuggled into a bill recently passed by that body for the printing and distribution of public documents. It provides that "the Vice-President, members and members-elect of and delegates and delegates-elect to Congress shall have the privilege of sending through the mails and under their frank any mail matter to any Government official or to any person, correspondence not exceeding one ounce in weight, upon official or department business." It will be seen that under this clause Congressmen may frank all of their correspondence, postmasters and post office clerks generally not being endowed with the omniscient power to determine whether a sealed letter is on "official or department business" or not. Yet the Post Office Department is already facing an annual deficit of $9,000,000.

IN some respects the report of the First Assistant Postmaster-General is likely to dash our pride in our postal system, especially the foreign service. As to the ocean carriage of the mails, the service has reached a state of much efficiency and expedition. In our delivery of foreign mail matter, however, there seems to be something wrong. The report states that for 1894 the number of letters and parcels returned by foreign countries to this country as undelivered was, in round numbers, 342,000, while the number so returned by this country to foreign countries was 643,000. The total number returned by Great Britain was 71,000, to Great Britain 112,000; by Switzerland none, to Switzerland 6,700. The total number of registered letters returned by all other countries in the Postal Union to this country was 2,872; by this country to the other countries, 22,277. This is not a very fine showing, but it may be that the reason given by a carrier was not far wrong: "Foreigners in this country know usually how to properly address a letter to their old home, while people in the old country often get things badly mixed when addressing letters to friends here."

No apparent progress has been made toward a settlement of the currency question since our last issue, and the natural inquiry among men is, "How much longer can the country sustain this burden of doubt and anxiety while Congress halts and haggles over partisan advantages?" A complete mental vacuum seems to have seized upon the minds of the nation's (mis)representatives, and while they potter and recriminate industrial and commercial interests are stagnating. There can be no real and substantial revival so long as this state of things continues. No one seems to have a clear or practical idea of what can and should be done, and where the people would, under ordinary conditions, naturally look for wisdom, prudence and ability only confusion and conflicting opinions seem to exist. John Sherman, who has been generally regarded as a sort of financial Goliath, appears to have been smitten with currency paresis in common with his fellow Congressmen, for there is no denying the small calibre, makeshift qualities of his proposed scheme. Simmered down to its true proportions it simply gives the United States Treasurer authority to borrow money whenever he thinks that he needs it on a 3 per cent. basis, the bonds to be payable in five years at the option of the Government, or in lieu of bonds he may issue certificates of small denomination at the same interest rate and payable under the same conditions as applied to the proposed 3 per cent. bonds, all of these forms of indebtedness to be payable in "coin." Primarily Mr. Sherman, through his bill, notifies the whole world that Congress is behind the Treasury, and justifies its Secretary in using the whole credit of the nation in meeting its pecuniary liability; but beyond this there is little value in it, while possibly it might open the door to currency inflation, as it permits the banks to issue notes—dollar for dollar—on the proposed bonds. This may possibly be a little better than another measure before Congress, which proposes inflation through an issue of more Treasury notes; but it is by no means certain that we need more currency half as much as we need more confidence in the wisdom and foresight of our legislators.

Watermarks.

BY DANDY.

A man who has been in the manilla rope business for over thirty years had a surprise this week. Some time ago he shipped some rope to a mill, and instead of a claim he got notice that he had not charged enough, the rope weighing 400 pounds more than it was billed.

There is encouragment in this for everyone dealing in manilla rope, and if others stick at it long enough they may have the same experience as O'Brien, who says that the check he received for the rope is one of the finest he ever had.

Next week will be a "hummer" in paper trade circles, owing to the fact that the midwinter meeting of the American Paper Manufacturers' Association is to be held at Delmonico's. An abundance of work has been arranged for the business meeting, and the members will be able to talk shop to their hearts' content.

In the evening there will be a fine repast for the inner man, and after the paper makers have had their first square meal of the year they will listen to speeches by a number of eminent speakers, all of whom have the happy faculty of presenting wit and wisdom in doses perfectly compounded and having cofrect parts of each.

The Western straw wrapping paper combination is reported as in trouble, and thus the expectations of the trade are being realized. Combinations in the paper trade come to grief, sooner or later, and as a rule they deserve to.

This combination, which took the form of a corporation, never was a real lusty infant, and while its possessions in the shape of paper mills were many, I take it they were not profitable.

The grill room sign "Open all night" was taken by some of the trade to apply to the offices of certain members of the paper trade near which it hung. The misunderstanding brought about a succession of congratulations to the supposed fortunate individuals, whose business had apparently grown to such proportions as to require an "always open" office. Thus is another boom busted.

Some of the boys in the paper and paper stock trades are having a taste of real campaigning now, as they are serving with their regiments over in Brooklyn, the scene of the railroad strike. Some of them have been complaining of hard times in the paper trade, but in their present position sandwiches and bootleg coffee three times a day is positive luxury.

Trade Talks.

George F. Perkins, of Perkins, Goodwin & Co.—So you want to know something about the first paper machine which I ever set up, do you? Well, of course I have some recollections of that occasion and also some reminiscences of the paper trade of that time, but it seems to me that if you want anything about Perkins it would come with a little more grace from some other source. I was never much of a hand to spread myself in the newspapers. I had all I wanted of that when nominated for mayor of Jersey City, being at that time many miles away, with no idea that such a step was contemplated. Now, to tell you something about the paper machine set up when I was a young man. When a boy I began to learn the business of building paper machines. It was not exactly, but somewhat, for the same reason as a boy becomes a lawyer or a doctor—because his father was before him. My father, to be sure, was a machinist and a manufacturer of paper machines, and when it was proposed to me to learn the machinist's trade I told my father that I should not go into it unless I learned it thoroughly. The result was that I did go into it did learn it, and went through with it—that is, served out my apprenticeship. While yet an apprentice I set up my first machine. My father was junior member of the firm of Tanner & Perkins, located at South Lee, Mass. The firm was quite an extensive manufacturer of paper machines for those times, and it sent them all over the country. This firm received orders for two machines to be set up in a new mill which had just been completed at Chatham Centre, N. Y., for Tompkins & Bullis. This mill was a modern mill of that date, and was very complete. This was about the year 1857. All of our other men were engaged in different part of the country, and there was no one to set up these machines. Therefore I was sent to do the job, being then about twenty years of age—probably in my twenty-first year. I got along very well with them, but found some difficulty in getting them to run evenly. After working upon this problem for some time I had to call in another man, by whose assistance the machines were finally made to work satisfactorily. In addition to these machines the firm of Tanner & Perkins built all of the machines and engines with which this mill was equipped. The machines which I set up were cylinder machines for making straw wrapping paper, and there was not much difference between them and similar machines now used, for there have been no particular changes since then in their manufacture, although, of course, there have been some modern improvements. Machines are now made much heavier and are rigged up to run more rapidly. The old shop in which I used to work is in existence to-day, but it is no longer used as a paper-machine shop. The firm of Tanner & Perkins was afterward dissolved. My father remained in the same business until his death, which occurred a few years ago. He was at the time of his decease about sixty-nine years of age. Mr. Tanner is yet living, but I do not know where he is or whether he is in the business of building paper machines now or not. At about this time (1857) I entered into negotiations to go into business with another man in Massachusetts, and it was only a difference of $500 which prevented us from coming to an understanding. He was that sum above me and would not come down. The following year I came to New York, and it was the best move and the best investment of $500 I ever made. The firm of H. C. & M. Hulbert was then in process of organization, and I was engaged as a clerk before it was completed. I clerked it with that house for some time and the rest is history.

Communications.

The Columbia Straw Paper Company.

[By Telegraph to THE PAPER TRADE JOURNAL.]

CHICAGO, January 24, 1895.

The Northern Trust Company and O. B. Jamieson, as trustees under a deed of trust, took possession yesterday of all of the mills of the Columbia Straw Paper Company, comprising between thirty and forty mills in nine different States, principally in Ohio, Indiana, Illinois and Iowa.

The reason for this action was the inability of the company to meet the interest on its bonded debt. Many of the bondholders and stockholders are conferring to-day as to reorganization. No plan has yet been formulated.

The prospect of reorganization is regarded favorably, as holders of over $700,000 worth of bonds of a total of $1,000,000 have responded in favor of it.

Outside mills look for an improvement in prices. Long continued depression and unremunerative prices are regarded as the cause of the disaster. R. B. D.

Receiver Appointed.

[By Telegraph to THE PAPER TRADE JOURNAL.]

CHICAGO, January 25, 1895.

On petition of the trustees, George P. Jones has been appointed by Judge Grosscup, of the United States District Court, receiver for the Illinois mills of the Columbia Straw Paper Company.

Bills will be filed to-day to make the same party receiver in each other State where the company's mills are located. R. B. D.

Hofmann's Treatise.

BOSTON, January 19, 1895.

Messrs. Howard Lockwood & Company, Duane Street, New York City, N. Y.:

GENTLEMEN—You may enter our order for three sets of the "HOFMANN'S TREATISE ON PAPER MAKING." We understand that this is to be published in parts, twenty (20) parts in the whole, and your proposition is that you will send invoices for five (5) parts of each set at a time. Please send the bill and the copies to us, 85 Water street, Boston, Mass. Yours truly,

(Sig.) RUSSELL PAPER COMPANY,
J. M. Wheaton.

[During the past week a number of orders were received for Hofmann's valuable treatise.—ED.]

Information Wanted.

NEW YORK OFFICE OF THE PENNSYLVANIA STEEL COMPANY, No. 2 WALL ST., cor. B'way. January 24, 1895.

Messrs. Howard Lockwood & Co., Publishers of The Paper Trade Journal, New York:

GENTLEMEN—Will you kindly give me the names of a few of the leading engineers and contractors for paper mill plants complete, including the ground wood, sulphite and news paper mills, and greatly oblige,

Yours very truly.
(Signed) F. A. BURR.

[The foregoing is published for the benefit of parties interested.—ED.]

Changes, Removals and New Firms.

The *Advocate*, Sidney, N. Y., is a new paper.

Geo. W. Collamore, publisher, Utica, Neb., has sold out.

The *Standard*, Dowagiac, Mich., has suspended publication.

The *Sun*, Rico, Col., has been purchased by Charles H. Berry.

The *Herald*, Brussels, Ont., has been sold to James Moore.

The *Fulton County Appeal*, Gloversville, N. Y., is a new paper.

The *Home Queen* Company, publisher, Philadelphia, Pa., has sold out.

The Omaha Publishing Company, Omaha, Neb., has been incorporated.

B. G. Jackson, stationer, Dubuque, Ia., has been succeeded by J. L. King.

The *Times*, Bancroft, Ont., is a new paper published by John Bremner.

The *Gazette*, Oviedo, Fla., is a new paper edited by C. D. Crutchfield.

Seman Weider has purchased the *Echo*, Dixon, Mo., from Nathan Wheeler.

Wm. Mortel has purchased the *Press*, Somerset, Ohio, from W. P. Magruder.

The name of the *Critic*, Allentown, Pa., has been changed to the *Morning Call*.

Henry P. White and Oscar Jennings have purchased the *Gazette*, West Plains, Mo.

Harrington & Kemper, publishers, Plattsburg, Mo., have removed to Benton, Ark.

The *Republican*, Battle Creek, Neb., has been purchased by C. F. Montrose Pierce.

Robert C. Clark & Co., envelope manufacturers, Philadelphia, Pa., have sold out.

Levi A. Dunlap, publisher, Mansfield, Tex., has removed to Garland, same State.

The *Morning Times*, Cripple Creek, Col., is a new paper edited by Thos. M. Howells.

The St. Clair Paper Manufacturing Company, Detroit, Mich., has been incorporated.

Nicharge & Forest, pulp manufacturers, &c., Seattle, Wash., have been incorporated.

Butterfield & Keith, publishers, Goldfield, Ia., have been succeeded by Keith & Keith.

Morris & Geyer, stationers, &c., Seward, Neb., have been succeeded by Fred. S. Morris.

W. O. Pickens, publisher of the *Times*, Carrabelle, Fla., has sold out to James R. Pickett.

The *Canadian Druggist*, Strathroy, Ont., will hereafter be published in Toronto, Ont.

J. B. Osborne, bookseller and stationer, Garnett, Kan., has been succeeded by J. A. Ramsey.

R. Freeman & Brother, printers, New York, have been succeeded by Reuben Freeman.

E. G. Hart, publisher of the *Journal*, Gananoque, Ont., has sold out to J. A. Thomson.

The *Dispatch* Publishing Company, publisher, Waukesha, Wis., has sold out to A. F. Warden.

Skinner & Nelson, printers, Philadelphia, Pa., have been succeeded by Charles B. Skinner & Co.

Montreal, Que., has a new French paper called *L'Essai*, which is devoted to poetry and literature.

The Pioneer Bindery and Paper Box Factory, Tacoma, Wash., has changed its name

to the Pioneer Printing and Binding Company.

The *Democrat*, Hattlesburg, Miss., has been purchased by W. A. Robinson and G. W. Fairfield.

Janesville, Wis., has a new paper called the *Rock County Sunday Mirror*, edited by Geo. W. Baird.

Goldsmith & Joseph, wholesale paper dealers, &c., Cleveland, Ohio, have dissolved partnership.

J. H. W. & R. Rohsenberger, stationers, Evansville, Ind., have been succeeded by the Evansville Drug Company.

The *Commercial* and the *Item*, Meridian, Miss., have been consolidated under the name of the *Commercial-Item*.

Noblesville, Ind., has a new weekly paper called the *Tribune*, edited and published by R. S. Reed and R. A. Martin.

The *Southwest Missouri*, Lamar, Mo., has been purchased by A. T. McAdow and consolidated with the *Republican*.

A new weekly fashion magazine called *Vanity Fair* is published by the Modern Press Publishing Company, Chicago, Ill.

The publication of *Science*, which suspended some time ago, has been resumed at 41 East Forty-ninth street, New York.

The plant of the *Tribune*, Waverly, N. Y., has been purchased by S. R. Alvord, former proprietor of the *Daily News*, Athens, Pa.

White & Nelson, booksellers, stationers, &c., Waukesha, Wis., have dissolved partnership. C. E. Nelson continues the business.

Mitchell & Smith, dealers in paper hangings, &c., Lincoln, Neb., have dissolved partnership. Mitchell succeeds to the business.

The Tanner Manufacturing Company, Cleveland, Ohio, has been incorporated to manufacture paper, &c. Capital stock, $10,000.

The Industrial Press, Chicago, Ill., has been incorporated by A. C. Luchen, George F. Webb and Lew H. Webb. Capital stock, $25,000.

The *North American* Publishing Company, Chicago, Ill., has been incorporated by Robert Haentze, L. Haentze and L. C. Hansen.

The plant of the *Herald-Advertiser*, Tomah, Wis., has been removed to Sparta, Wis., where the paper will be published hereafter.

The *News*, Nelsonville, Ohio, a weekly paper, has been purchased by Thomas W. Jones, city editor of the *Tribune*, Gallipolis, Ohio.

W. T. Prime has bought a half interest in the *Star and Herald*, Dwight, Ill., the *Tribune*, Braceville, Ill., and the *Tribune*, Gardner, Ill.

The *United States Miller*, Milwaukee, Wis., has consolidated with the *Weather and Crop Journal*, and will be edited by Otis Colbron.

The *Herald*, Durango, Col., has consolidated with the *Southwest*. Captain Dill, of the latter paper, has charge of the editorial management.

William Bladon, bookbinder, Janesville, Wis., has sold out to W. E. Clinton, who will carry on the business under the style of W. E. Clinton & Co.

The Tribou Publishing Company, Chicago, Ill., has been incorporated by N. M. Tribou, W. J. Maguire and F. A. Greenlaw. Capital stock, $10,000.

M. M. Gunce, publisher of the *Democrat-News*, Xenia, Ohio, has sold out to L. H. Whiteman, proprietor of the *Herald*, who will consolidate the two papers.

The *Times*, Beatrice, Neb., has been bought in at chattel mortgage sale for the benefit of the stockholders by W. L. Knotts, who will continue the management.

McEwan, Downs & Co., paper manufacturers, Whippany, N. J., have dissolved partnership, W. W. McEwan retiring from the business. Geo. W. Downs & Co. continue.

The Chapin Company, Minneapolis, Minn., has been incorporated to publish a weekly paper and to do a general printing and publishing business. Capital stock, $15,000.

The Chambers Printing Company, New York, has been incorporated with a capital of $15,000. The directors are Henry Muhlhauser, Charles Hartmann and Michael Feinberg.

The *Union Printer*, New York, a weekly publication issued in the interest of printers, has been enlarged and has changed its name to the *Union Printer and American Craftsman*.

The Deutsch Publishing Company, Baltimore, Md., has been incorporated by Theodore F. Lang, Wm. Deutsch, Ferdinand Deutsch, Frank Nolan and Nathan M. Alcock. Capital stock, $2,500.

The John J. Mitchell Fashion Plate Company has been incorporated to print fashion plates and conduct a journal of fashion. Capital, $3,000, and directors, David Steinweg, John J. Mitchell and Max Gutmann.

The Southern Compo-Board Company, Austin, Tex., has been incorporated by Charles A. Smith, Charles J. Johnson, Arthur R. Rogers, Octavius C. Drew and Monroe F. Ellis. Capital stock, $500,000.

The *Puget Sound Lumberman*, Tacoma, Wash., has been bought by a new company, the incorporators of which are: W. E. Swartz, W. B. Somers, J. W. Wallace and Charles Richardson. Capital stock, $5,000.

The Military-Naval Publishing Company, of New York, has been incorporated to carry on a general printing and publishing business; capital, $25,000, and directors, David T. Stanley, Alex. B. Bacon and Francis M. Applegate.

The Justice Printing Company, Louisville, Ky., has been incorporated to conduct a printing and publishing business. The incorporators are S. W. Colston, W. L. Drake and George W. Smith. Capital stock, $5,000.

The *Gazetta Palska* Publishing and Printing Company, New York, has been incorporated to publish a newspaper in the Polish, English and Lithuanian languages. Capital, $2,000, and directors, H. P. Lewandowski, Adolph Lewinski, Vincent Kostecki, Czeslaw Raganowiz and Bernhard Bonstein.

John Chatillon & Sons, of New York, have been incorporated to deal in spring and other balance scales and weighing machines and all kinds of hardware and machinery, &c. Capital, $200,000, and directors, Geo. H. Chatillon, Edward Schaefer, of New York city, and Louis A. Tranberg, of Brooklyn.

A. E. Beckwith, who recently bought out the Utley Printing Company, Norwich, Conn., and changed the firm name to the Norwich Binding and Printing Company, will issue a new weekly newspaper to supplant *Snap Shots*, a society paper. The new venture will come out on Saturday, January 26, under the name of the Norwich *Weekly Post*, illustrated, 16 to 18 pages weekly.

Failures.

Allain & Steampfli, stationers, Seattle, Wash., have made an assignment.

Jones & Armstrong, booksellers and stationers, Rome, N. Y., have assigned to W. B. Bliss.

Conrad Grode, bookseller and stationer, Milwaukee, Wis., has assigned to O. A. Miller.

Theodore Ripple, dealer in paper hangings, Canal Dover, Ohio, has been closed out by the sheriff.

Chas. S. Gallaher, stationer, &c., Milwaukee, Wis., has been closed out by the sheriff, and attached for $433.

Ernest Ruestow, stationer, 428 Broome street, New York, has confessed judgments in favor of his wife, Theresa, for $2,181 and to Robert Romelin for $618. He has been in business twenty years.

The sheriff is in charge of the place of business of Wilbur W. Thomas, printer, 101 Warren street, New York, doing business under the style of the Irving Press, on attachments in favor of Harry A. Richards for $1,000 and Edward J. Merriam for $223. There are several chattel mortgages, it is said, on the presses.

Travis E. Gooding, bookseller and stationer, Hillsboro, Tex., has filed a deed of trust, naming H. T. Ivy as trustee, for the benefit of his creditors, the following named being preferred in class A: Johnson & Works, $150; M. E. Gooding, $502; Woolridge & McCammen, $285; H. H. Hansel & Brother, $98. Class B: W. S. Blackshear, $161. Total, $1,196. The assets are estimated at $2,200. It is thought that Mr. Gooding will be able in a short time to make a satisfactory settlement and resume business.

Foreclosure proceedings against the Columbia Straw Paper Company were begun in the United States Circuit Court, in Chicago, on Thursday afternoon, the Northern Trust Company filing the bill and asking for the appointment of a receiver. George P. Jones was named as receiver by the Court. Similar foreclosure proceedings have been begun in nine different States in which the company owns mills. Inability to meet interest payment on $1,000,000 in bonds is set up by the bill as the reason for the proceeding. The company was organized in January, 1893, with a capital stock of $4,000,000, and the incorporation was made under the laws of New Jersey. The bond and stock holders, it is announced, will meet soon to discuss a plan of reorganization.

A meeting of the creditors of Walter & Place, dealers in paper, &c., New York, who failed a couple of weeks ago, was held at the Astor House on Saturday last. Henry J. Howlett was elected chairman and Mr. Hiss secretary. The firm made a statement showing liabilities of $52,000 and assets of $32,000, and made an offer of 40 cents on the dollar, 20 cents of which to be paid in sixty days. The creditors appointed a comittee to investigate, and another meeting will be held when the committee is ready to report.

Deputy Sheriff Lipsky has seized the books of account of the Universal Fashion Company, 33 Lafayette place, New York, on an attachment for $500, in favor of Gibb Brothers & Moran for balance due on a note. The deputy sheriff said that he did not touch the plant, as it is covered by a chattel mortgage. The company gave a chattel mortgage on the 21st inst. for $1,500 to the Lovell Brothers Company, in the same building. The business was established fifteen years ago to make paper patterns, and the company was reorganized last July under New Jersey laws, with a capital stock of $100,000.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
Farquhar & Campbell, Cambridgeport, Mass.	$1,700

MIDDLE STATES.

Aaron Murstein, Buffalo, N. Y. (Real)	6,000
A. H. Paddon, Buffalo, N. Y.	126
C. H. Ward, Buffalo, N. Y.	269

WESTERN STATES.

Treish Brothers, Kendrick, Idaho	600
W. B. King, DeKalb, Ill. (B. S.)	5,000
J. W. Easton, Gillespie, Ill.	400
Freeman A. High, Havana, Ill.	400
Vernon & Carson, Nashville, Ill	1,000
Crawford & Hallowell, Atlantic, Ia.	1,000
Davis & Hamilton, Bloomfield, Ia.	112
S. O. Riggs, Indianola, Ia.	210
John A. Moran, Meservey, Ia.	217
C. E. Lee, Sac City, Ia. (B. S.)	—
Roberts & Hillhouse, Kalamazoo, Mich.	8,700
The Commercial Printing Company, Minneapolis, Minn.	500
DuKinfield Brothers, Minneapolis, Minn.	240
Herman F. Rogers, Minneapolis, Minn.	110
H. M. Crane, Bloomington, Neb.	315
The *Review* Publishing Company, Omaha, Neb.	146
W. S. Swenson, Randolph, Neb. (B. S.)	1,200
J. H Howard and Adolph Stratemeyer (Peerless Printing and Manufacturing Company), Chillicothe, Ohio	721
The *Standard* Publishing Company, Cincinnati, Ohio (Real)	4,000
L. H. Tittle & Son, Springfield, Ohio	100

SOUTHERN STATES.

L. M. Spivey, Kingston, Mo.	175
H. E. Robinson, Maryville, Mo. (Real)	1,200
J. L. Matthews, Oklahoma City, Okla.	217
Travis E. Goodung, Hillsboro, Tex. (T. D.)	—
H. Box, Texarkana, Tex. (T. D.)	—

LIENS DISCHARGED.

Anna M. Harper, Newark, N. J.	1,000

Personals.

W. F. Dodge, of E. Butterworth & Co., Manchester, England, arrived here on Saturday last.

In Town.

J. K. Dexter, Springfield, Mass: A. N. Burbank, Boston, Mass; James Ramage, Monroe Bridge, Mass.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL,
FRIDAY, January 25, 1895.

THE MONEY MARKET.—The stock market is yet unsettled and feverish. At the Stock Exchange call loans on stock collateral were made generally at 1 per cent. There is small inquiry for time contracts, but offerings were lighter. Quotations for time loans are 1½ per cent., nominal, for thirty to sixty days, 2 per cent. for ninety days, 2½ per cent. for four to five months and 3 per cent. for six months. The offerings of first-class commercial paper are small. Rates are 2¼@3 per cent. for sixty to ninety days' indorsed bills receivable, 3@3½ per cent. for four months' commission house and prime four months' single names, 3½@4 per cent. for prime six months', and 4½@7 per cent. for good four to six months' single names, for which there is only a moderate inquiry. The banks which buy paper report that they find brokers unable to accumulate any important lines of notes, and add that they see no signs of early improvement in the market. The market for foreign exchange was moderately active and strong, being practically without change in rates or conditions from Wednesday. Importers were the chief buyers, and their requirements could be supplied only through sales of bills against gold exports to be made by the steamers sailing to-morrow. Posted rates were $4.89 for sixty days and $4.90 for sight. Actual rates were $4.88@4.88¼ for sixty days and $4.89@4.89¼ for sight.

THE PAPER TRADE.—Business is not very brisk in the paper market, and there does not appear to be any particular snap in the call for goods. The demand for news is very good, and Eastern mills are busy as can be. The straw wrapping combination known as the Columbia Straw Paper Company, is reported as in trouble, and foreclosure proceedings have been begun against it.

JUTE BUTTS.—The market is quiet and unchanged.

WOOD PULP.—There is a steady call for Ground Pulp for home consumption, but prices do not lift any.

WOOD FIBRE.—There is a fair call for Chemical Fibre. Bleached Soda is quoted 2½@2¾c., as to quality. Domestic Sulphite is quoted at 1¾@2¾c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.15c.; Bleached, do., 3.85@4¼c.; Bleached Straw Pulp, 3.80c. This week there were imported at this port 70 tons of Chemical Fibre, being all from Hull.

FOREIGN RAGS AND PAPER STOCK.—The market for foreign rags continues quiet and there is very little going on that is of interest. Imports for the week aggregated 2,312 bales and 70 tons, being 461 bs. rags, 70 tons chemical fibre and 1,851 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 1,201 bs. manillas; Genoa, 202 bs. rags, Hull, 70 tons chemical fibre; Leghorn, 185 bs. manillas; London, 114 bs. rags; Newcastle, 191 bs. manillas; Stettin, 145 bs. rags, 274 bs. manillas.

DOMESTIC RAGS.—Collections are light. The demand is not heavy, but there is enough call to keep stocks well cleaned up. We quote: Whites, 3.20@3¼c.; Soiled Whites, 2.15c., and No. 2's, 1.15c.

BAGGING, &c.—The market for Gunny is unchanged. The nominal quotation is 1.02½@1.05c., but no business is reported. Manilla imports for the week aggregated 1,851 bales, being 1,201 bs. from Antwerp, 185 bs. from Leghorn, 191 bs. from Newcastle and 274 bs. from Stettin.

OLD PAPERS.—The market is undisturbed by heavy business. We quote: No. 1 Hard White Shavings, 2½@2¾c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1⅞@2c.; Old Ledgers, 2c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1¼c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News, 35c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—The market is quiet but steady. We quote: Long Rye at 50@55c.; Short Rye at 40@45c.; Wheat at 40c.; Oat 35@45c.

ROSINS.—The market is quiet and without feature. We quote: Common to Good Strained, $1.60@1.67½; E, $1.70@1.75; F, $1.85; G, $1.90@1.92½; H, $2.15@2.20; I, $2.65; K, $2.90; M, $3.20; N, $3.30; W G, $3.45.

CHEMICALS.—The market for paper makers' chemicals as a whole is very quiet. Late advices speak of the Liverpool market as follows: "In the Alkali market the demand generally is good, the sales for export account being fairly brisk for all kinds of Alkali. Spot quotations on Caustic Soda are again slightly in buyers' favor, and current quotations may be taken as follows: f. o. b. Tyne, 77 per cent., £10; f. o. b. Liverpool, 74 per cent., £9; 70 per cent., £8; 60 per cent., £7 per ton, 10 ton lots and upward. Alkali, 58 per cent., is maintained at recent advance, £3 7s. 6d. per ton being the price in bags at maker's works, and £3. 17s. 6d. to £4 in casks, f. o. b. Leblanc Soda Ash, ordinary, 1d. per degree, f. o. b. Soda Crystals still ruling at low rates. Bleaching Powder, £7 5s. per ton, f. o. b. maker's works, and £7 7s. 6d. to £7 10s., f. o. b. Bleaching Powder is limited on spot and values are firm. Alkali is steady, and Caustic Soda for prompt delivery is wanted as shipments have been delayed. During the week there have been sales 25 cks. Bleach at 1⅞@1.95c.; 10 tons Soda Ash at 1⅛c.; Caustic Soda, 70 per cent., at 2.30c., and 74 per cent. at 2.32½c., and Alkali, 1½@2.10c.

CHINA CLAY.—The demand from the paper trade is rather slow at the moment. From the recent arrivals there have been several sales from dock at $13 per ton, while for store parcels they are asking $17@18 per ton, as to the size of the order. Stocks in first hands are lower than they have been during the past two years.

TWINES.—There is a fair amount of business in progress. We quote: Sisal Hay Rope, 5@6c.; Sisal Lath Yarn, fine, 9¼c., and medium, 9c.; Jute Lines, 7½c.; Jute Ready, 7@7½c; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¾c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c.; Russian Hemp Hay Rope, 9c.

COAL.—The market is without any material change. Efforts are being made to get stocks more under control, but they do not appear to be very successful.

EDWIN BUTTERWORTH & CO.,
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing,
Wood Pulp, Moist and Air Dry Pulp,
Soda and Ground Pulp,
83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
JAMES FIRNIE, A. S. DEMAREST, } Managers.

WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	85	@	1.00
White tissue, 24×36, ℔ ream	1.20	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¼	@	6¾
Manillas, No. 2	5	@	6
Manillas, Bogus	3½	@	3½
Wrapping Parchment	18	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	34.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	72	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	60
24×36, from 24 to 26 lbs. ℔ rm	....	@	50
22×32, from 24 to 26 lbs. ℔ rm	50	@	....
20×30, 21 lbs., ℔ rm	..	@	44
20×30, from 14 to 17 lbs. ℔ rm	30	@	....
16×22, from 12 to 13 lbs. ℔ rm	25	@	....
18×28	....	@	12
15×20, 10 lbs. ℔ rm	....	@	18
15×20, from 7 to 8½ lbs. ℔ rm	....	@	15
14×16	....	@	12
12×16	....	@	11
11×15	....	@	10
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12x18	....	@	13
14x20	....	@	18
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Pulps and Fibres.

Ground Wood, domestic, delivered	1	@	1.35
Ground Wood, foreign, ex dock	....	@	....
Soda Fibre, domestic, unbleached	....	@	....
Soda Fibre, domestic, bleached	3	@	3¼
Soda Fibre, foreign, unbleached	2.65	@	3
Soda Fibre, foreign, bleached	3½	@	....
Sulphite, domestic, unbleached	2.60	@	3
Sulphite, domestic, bleached	3½	@	3¾
Sulphite, foreign, unbleached	3	@	3½
Sulphite, foreign, bleached	4	@	4½

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1	@	1.80
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1½	@	2
Alum, Diamond	....	@	2½
Alum, pearl	2½	@	3½
Alum, porous	2½	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¾
Anti-Chlorine	....	@	2½
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	....	@	1¾
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.30	@	2.30
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	90	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	90	@	95
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.60	@	1.67½
Rosins, E, ℔ bbl	1.70	@	....
Rosins, F, ℔ bbl	....	@	1.85
Rosins, G, ℔ bbl	1.90	@	1.92½
Rosins, H, ℔ bbl	2.00	@	....
Rosins, I, ℔ bbl	2.60	@	....
Rosins, K, ℔ bbl	....	@	2.95
Rosins, M, ℔ bbl	3.30	@	3.00
Rosins, N, ℔ bbl	....	@	3.35
Rosins, W G, ℔ bbl	3.60	@	....
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℔ cent	1	@	1½
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

DEUTSCHER, MIT 16 JAHREN ERFAHRung, Referenzen, flotter Arbeiter, mit allen und neusten Maschinen der modernen Papierfabrikation vollstandig vertraut, sucht irgendwelche Stellung. B. K., 80. 1 Str., New York City.

WANTED—BY PRACTICAL PAPER MAKER, situation as foreman; well up in tissue, manilla, news, flour sack and bag paper. Address A. B., care of Paper Trade Journal.

WANTED—SITUATION BY FIRST-CLASS superintendent; well up in all grades of manilla, tissue, flour sack and Mikado papers. Address ROBERT DAW, Lachute Mills, Province of Quebec, Canada.

WANTED—SITUATION AS FOREMAN IN A box and binders' board mill by a competent man; reference. Address FOREMAN, care of Paper Trade Journal.

WANTED—A FIRST-CLASS, PRACTICAL man capable of taking full charge of a 40 ton daily capacity sulphite fibre plant; quick cooking and vacuum acid systems used; state salary expected. F. S. M., care Paper Trade Journal.

FINISHER—AMERICAN, SOBER AND steady, wants situation on book, news and manilla; ten years' experience; good references from last employer. E. A. CHIPMAN, Mechanic Falls, Me.

WANTED—A PAPER SALESMAN thoroughly conversant with city trade and vicinity, more particularly in manilla and wrapping papers; to a steady, reliable man a permanent position is assured with salary and commission. Address SALESMAN, Paper Trade Journal office.

SITUATION WANTED AS ENGINEER; WELL up in the business; steady man; good references. Address A. C., care of The Paper Trade Journal.

WANTED

$250,000 to start a wood pulp mill in one of the best places in Canada. Extensive water power and over 300 square miles of timber limits; best facilities for shipping and low freights. Probable dividends 10 to 15 per cent. Product of mills to be sold in England. Money secured on land and mills. Correspondence solicited.

J. H. LEFEBVRE,
136 St. James St., Montreal, Canada.

WANTED

By a thoroughly equipped general foundry and machine works, some specialty to manufacture in the machinery line; heavy machinery preferred; familiar with paper machinery. Address NATIONAL, care Paper Trade Journal.

SITUATION WANTED,

By young married man, as boss in color department; understands mixing colors for fine colored, white plated and chromo papers, enameled and glazed, ivories and satins for lithograph, bristols, boxboards and wedding cards; can give good reference. Apply to COLOR MIXER,
Post Office Box 818, Holyoke, Mass.

FOR SALE—A 58 INCH RIGHT-HAND Findlay paper cutter; as good as new. ADAMS & CO., Chagrin Falls, Ohio.

HERE IS AN OPPORTUNITY FOR A paper mill foreman or machine tender who wishes to start in business for himself. We have a small mill about ready to run which we will sell for a very low figure on long, easy payments. The building is situated in a good location, on railroad, good water, &c. This will bear investigation. For particulars address L. M. N., care of Paper Trade Journal.

PAPER MILL PROPERTY FOR SALE

In New Baltimore, Greene County, N. Y., situated one mile from boat landing on Hudson River, two miles from railroad station West Shore Railroad; formerly owned by Croswell & Parsons; two engine mill; good water power; house and barn, with five acres of land. On account of illness will sell for $2,500 cash. STEPHEN PARSONS, New Baltimore, N. Y.

PAPER MILL FOR SALE.

PURSUANT to an order of the Superior Court for Fairfield County, I will sell at Public Auction, on Tuesday, March 5, 1895, at 2 o'clock P. M., the entire Paper Mill property, situated at Oronoque, Shelton, Conn., recently owned and operated by the late HENRY J. ROBERTS, and consisting of about one acre and a half of land, with dwelling house and factory thereon, and the entire fixtures and machinery contained in said factory and used in the manufacture of tissue and other grades of paper, together with all water power rights connected with said property. Sale to take place on the premises.

For full information in regard to this property, address

CHARLES N. DOWNS,
Committee for Superior Court,
Derby, Conn.

FOR SALE.

Two diaphragm screens, each for six plates, 12x40x5-16 inches, heavy and strong, entirely new; have never been out of shop.

THE BLACK & CLAWSON CO.,
Hamilton, Ohio.

FOR SALE.

Two second-hand Jordans.
One Marshall Engine.
Two Rotaries, 6 x 20 ft.
Two Daniels Rag Cutters.
Two Revolving Paper Cutters.
All guaranteed in good condition; nearly new.

NOBLE & FOSS MACHINE CO.,
Hoosick Falls, N. Y.

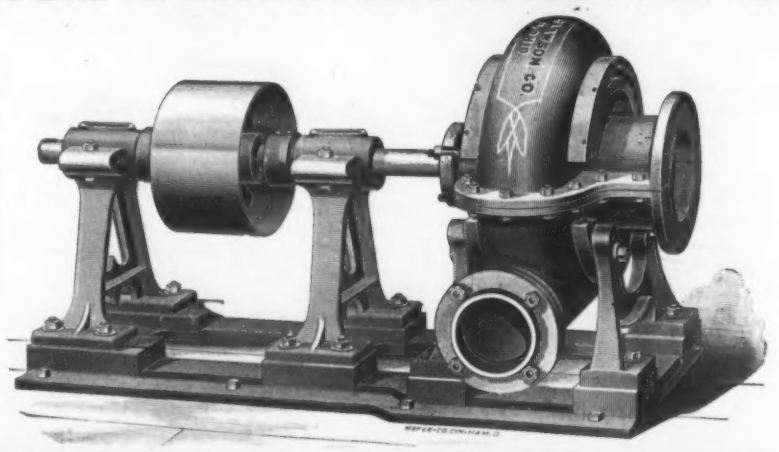
TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1894.

C. F. HANMER, Secretary.

THE BLACK & CLAWSON CO., MANUFACTURERS OF Paper Mill Machinery,



FOURDRINIER,
HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.

JORDAN ENGINES.

Jordan Engines Refilled.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

REVOLVING REELS AND STACK REELS.

FOR PARTICULARS ADDRESS

WE MAKE THE ONLY PERFECT DRYER. *THE BLACK & CLAWSON CO., Hamilton, Ohio.*

MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

PAPER MILL

For Sale or Rent.

ADDRESS
JOHN A. DUSHANE,
44 South Charles Street, Baltimore, Md.

PAPER MILL MACHINERY.

One 82 inch Fourdrinier machine complete, with gun metal press rolls; nine 36x78 inch dryers; stack of chilled rolls; reel, cone pulley cutter; Marshall driving train; made in 1887 and used three years.

One 76 inch Fourdrinier machine which takes 42 foot wire; gun metal press rolls; nine 48x72 inch face dryers; heavy stack chilled rolls; reel, cutter and Manning winder. Both machines set up as last used.

One 70 inch Fourdrinier, which takes 33 foot wire; gun metal press rolls; twelve 28x66 inch dryers; of stack chilled calender rolls; reel and cutter.

One 54 inch cylinder machine; two molds, vat, first and second presses; seven iron dryers, 28x54 inch face; new revolving reel; new cone pulley cutter; machine set up as last used.

Two new Jones double lighter beating and washing engines; iron rolls 52 inch face and 60 inches diameter.

One new Jones double lighter beating and washing engine; iron roll 52 inches diameter and 52 inch face.

Eight (Holyoke Machine Co.'s make) 1,000 pound beaters; 42 inch iron rolls; new tubs; bars in excellent condition.

Six (Holyoke Machine Co.'s make) roll beaters; tubs in fair condition; rolls 42x42 inches.

Two good tub beaters in excellent condition; iron rolls 40x40 inches.

Two iron tub beaters with iron rolls, 36 inch face.

Three Jordan refining engines, newly filled; practically as good as new.

One practically new 7x20 foot rotary boiler.

Two 6x20 foot rotary boilers.

One 14x42 foot Corliss automatic steam engine.

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RATES FURNISHED TO ALL POINTS.

RECEIVER'S SALE.

Valuable Paper Mill Plant

M. Conlen, of Dover, N. H., Auctioneer.

Will be sold by order Supreme Court of New Hampshire, at Milton, N. H.,

WEDNESDAY, January 30, 1895,

AT 12 O'CLOCK M.,

All the property of the Milton Manufacturing Co., comprising a well equipped Paper Mill with modern machinery in good repair, having capacity of 4 tons per day. Engine room 52 x 102, two stories; storeroom overhead; six 500 lb. Holyoke beaters, cylinder washers attached; one Jordan beater, by Horne, Lawrence; one set filling for same; eight stock cars; one 54 inch Hunt water wheel, 150 H. P.; one No. 2 Hunt double acting regulator.

Machine room 41 x 127, two stories; repair shop overhead; one 72 inch double cylinder machine, one spare cylinder; Barber's siphon suction; twelve 28 inch dryers; twenty-two speed gears; one stack nine calender rolls, Holyoke Machine Co.'s; one stack five calender rolls; 300 iron shells, different lengths; one 52 inch Finley cutter; one Daniels cutter and duster; one 42 inch Hunt water wheel with regulator, 100 H. P. Repair shop has all necessary tools for repairing machinery.

Water power is 150 H. P., 19 feet head; boiler house 42 x 21, brick; two Salem boilers, one 160 H. P., one 60 H. P., pump and siphon. Coal sheds 20 x 115. Storehouse 32 x 150. Side track Boston & Maine R. R. delivers and receives directly from mill. No expense of teaming. Land and power leased from Great Falls Manufacturing Co.; rental $500 per annum; lease expires August, 1904, when six months given to remove buildings and property, or it can be renewed on easy terms. Tenement houses close by the mill.

Above property cost $50,000 to $60,000 and will be sold in one lot. Sale positive, rain or shine. Train leaves Union Station, Boston, 8:26 A. M. Terms of sale—$500 cash down, balance in five days at office of receiver. For further particulars and plans inquire of

GEORGE R. FOWLER, Receiver,
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Hofmann's Treatise on Paper Making

Two second-hand copies in first-class condition will be sold at a sacrifice. Desire to dispose of same at once. Address

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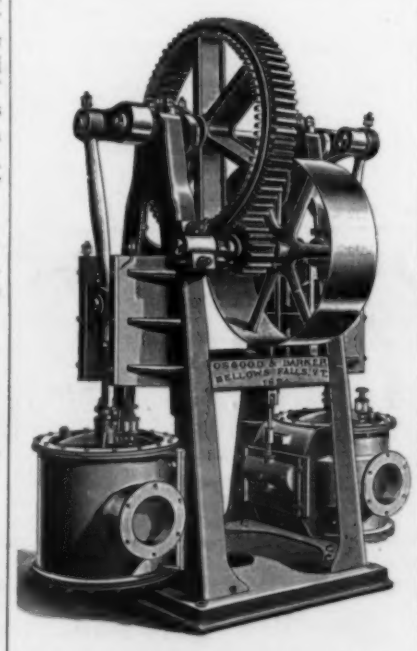
Care Journal.

NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 285,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law.

MOSES NEWTON, Patentee.



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Weight, Four Tons.

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FOR SULPHITE PLANTS.

Fourdrinier and Cylinder Paper Machines,
With one, two, three or four stacks of dryers.

Upright Reels, with two or three Drums,
Reel Stacks and Revolving Reels,

Rewinding and Slitting Machines,
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For buffing ends of the rolls.

Ground Wood Pulp Machines, Wet Machines.

Pulp and Paper Machinery
For all kinds of Paper.

WRITE FOR DESCRIPTIONS AND PRICES.

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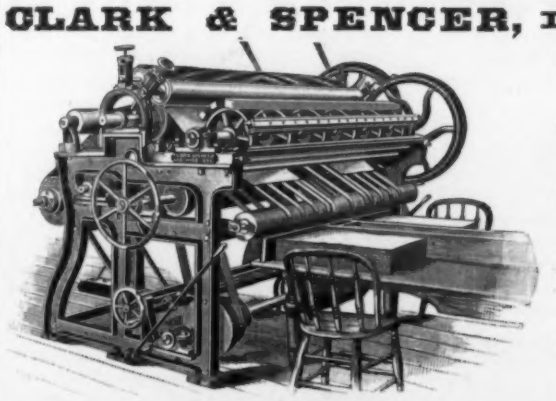

Revolving Paper Cutters,
Rag Cutters,
Cylinder Machines,
Washing and Beating Engines,
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RIEGELSVILLE, WARREN CO., N. J.,

Manufacturers of THEIR IMPROVED GIANT RAG CUTTERS,

Fly Bars, Bed Plates, Rag Cutter, Barker and Chipper Knives; also Paper Trimming Knives.

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I make Cogs with blank head to be spaced and dressed after being driven; but make A SPECIALTY OF "READY DRESSED" cogs, which are ready to run the moment driven and keyed.

REMEMBER: I make ALL KINDS of Mill Cogs and have special facilities which will be of great service to you. WRITE AT ONCE for circular and instruction sheets, FREE.

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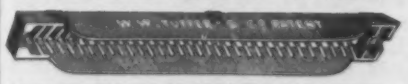

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For Paper Mill Dryers.

Four thousand now in use. Does away with Packing the Dryers; no leakage of steam; requires no attention and will last for years. Medal awarded at World's Fair. Send for circular and price list.

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HIGH EFFICIENCY and GREATEST DURABILITY.

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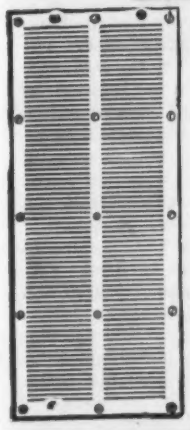

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—OF—

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CAST METAL.

REPAIRING

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A SPECIALTY.

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BEATING ENGINE.

METAL

SKYLIGHTS

Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

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Three Different Machines

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A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

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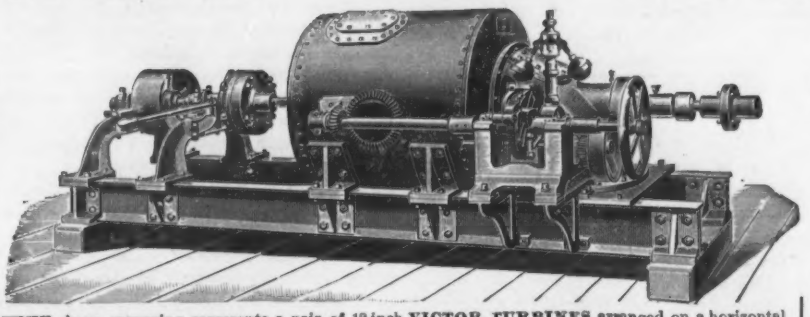
CAUTION.

All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

THE VICTOR TURBINE.

UPRIGHT or HORIZONTAL.



THE above engraving represents a pair of 12 inch VICTOR TURBINES arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines, either single or in pairs, on horizontal shafts, and where the situation admits of their use we recommend them.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch	18.06	80.17	.8932
17½ inch	17.96	96.35	.8930
20 inch	18.21	45.00	.8532
25 inch	17.90	68.62	.8584
30 inch	11.65	52.54	.8676
35 inch	17.20	133.19	.8497
40 inch	16.49	148.98	.8253
48 inch	15.51	179,29	.8202

CYLINDER OR REGISTER ***GATE.***

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

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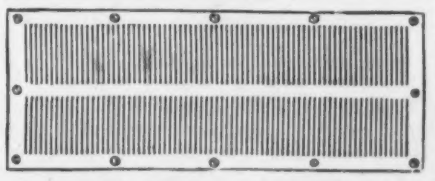

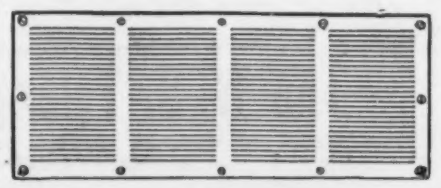

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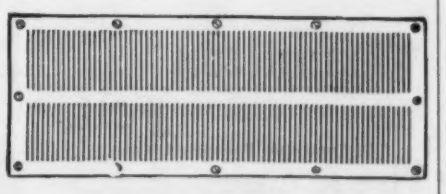

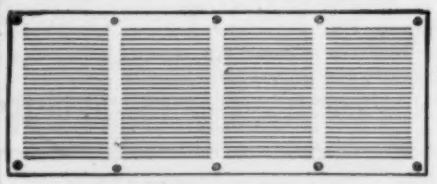

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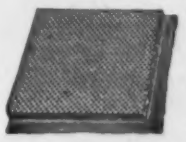

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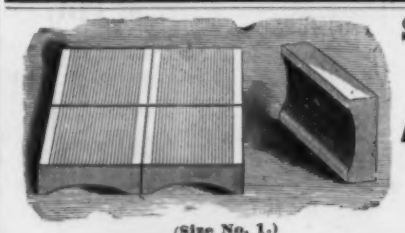

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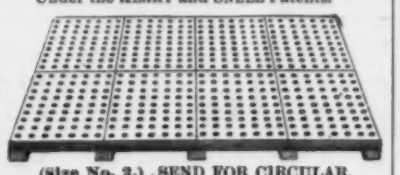

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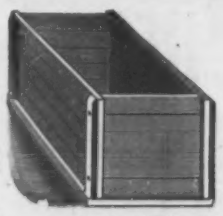

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DRAINERS, STUFF CHESTS,
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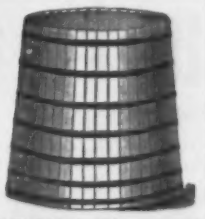
In sending for estimates state if measurements are inside or outside and thickness of wood desired.



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Fits into a narrow space and requires but little power to operate.

It has a double agitating motion, moving the stuff in different directions, which prevents "floating."

It empties itself clean; no waste of stuff and protects from dirt.

Quantity of stuff in chest always shown by indicator.

In writing give space in height, length and breadth if pressed for room; also the amount of stock in dry paper that the chest is wanted to hold.

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MACHINISTS AND IRON FOUNDERS.

SPECIALTIES:

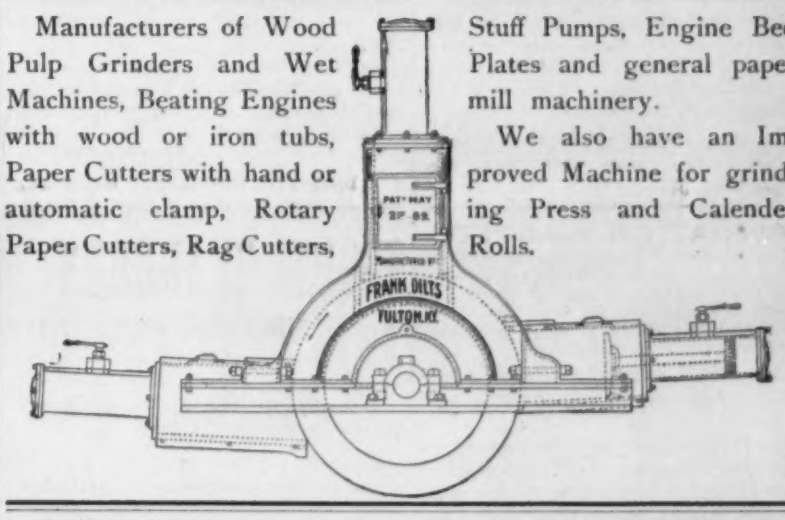
Improved Paper-Coating Machines; Hanging Machines and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.

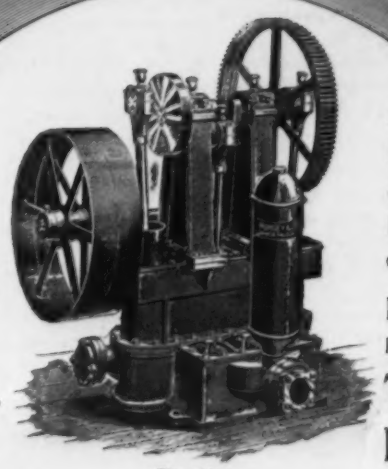
DILTS' MACHINE WORKS, FULTON, N. Y.,

Manufacturers of Wood Pulp Grinders and Wet Machines, Beating Engines with wood or iron tubs, Paper Cutters with hand or automatic clamp, Rotary Paper Cutters, Rag Cutters, Stuff Pumps, Engine Bed Plates and general paper mill machinery.

We also have an Improved Machine for grinding Press and Calender Rolls.



Power Pumps for all Purposes.



Some Pumps are Better than Others.

RUMSEY'S Pumps are THE BEST.

Fig. 669.

RUMSEY & CO., Limited,

Seneca Falls, N. Y., U. S. A.

35 Dey St., NEW YORK.

Send for Catalogue and Prices. Correspondence Solicited.

ESTABLISHED 1848.

JOHN WALDRON, NEW BRUNSWICK, N. J.,

MANUFACTURER OF ALL STYLES OF

COATING MACHINERY FOR LITHOGRAPH, LABEL, FANCY, GLAZED, BOOK AND SAND PAPERS.

Also Cardboard and Paper Hangings Machinery. Hilbers, Stalb and Waldron Patent Hanging Up Machines. Patent Power Reeling Machines for Coated Papers and Cardboard. Embossing Machines, Paper Rolls, Polishing Machines, &c.

Machinery is universally used by the manufacturers of above goods in the United States and Canada.

Manufacturing News.

EASTERN STATES.

Work on the construction of the new pulp mill at Orono, Me., was begun on Monday last.

The Berlin Iron Bridge Company, East Berlin, Conn., reports that it has closed its purchasing agent's office in Philadelphia, and hereafter all purchases will be made from the office of the company at East Berlin. W. E. Stearns, who lately occupied the position of purchasing agent, has severed his connection with the company and has accepted an important position with the Pennsylvania Steel Company.

The Mount Tom Sulphite Pulp Company, Mount Tom, Mass., has improved its plant by adding 50 feet to the wood room, putting in a new boiler of 150 horse power, and building a 200 foot roof over the railroad tracks where the cars are unloaded.

The improvements at the mill of the George C. Gill Paper Company, Holyoke, Mass., are about completed. When the engine room equipment is complete the mill will be independent of water power.

The Beebe & Holbrook Company, Holyoke, Mass., is putting in a 42 inch turbine at its mill.

The Chelsea Paper Company, Norwich, Conn., has fitted up a second machine with the latest improvements for turning out a larger amount of paper and improving the quality. It has added new dryers, screens, and has lengthened the machine and added an animal sizing box. This is a great improvement over the drying and sizing machine which had formerly been used to size its papers, and will facilitate its production of animal sized writings.

MIDDLE STATES.

The old Westervelt property near Bogota, N. J., has been purchased by the Rogers Paper Company, which proposes to erect at once a large paper mill, to which will be removed the business and equipment of its Connecticut plant. Excavating for the foundation has begun.

Keller Brothers, Fullerville, N. Y., have leased a talc bed for a term of years, and will add to their pulp mill machinery for grinding the same. They expect to have talc ready for market about June 1.

The Gould Paper Company, Lyons Falls, N. Y., has abandoned work on its mill until spring, when a very large force of men will be put on and lost time will be made up.

The Herkimer Paper Company is receiving large quantities of pulp for its pulp mill at Lyons Falls, N. Y. Last week it had over ninety teams at work.

The Newton Falls Paper Company, Newton Falls, N. Y., is busy putting up a saw mill, in order to get out lumber for its new mill.

The Hudson River Pulp and Paper Company, Palmer's Falls, N. Y., has made a large addition to its sulphite mill and will, it is said, enlarge its paper mill during the coming spring.

The Ticonderoga Pulp and Paper Company, Ticonderoga, N. Y., has put in a new Corliss engine in its fibre mill.

The Dilts Machine Works, Fulton, N. Y., have shipped one of their 44-inch self-clamping ream cutters to Moyer & Pratt, Greig, N. Y.

WESTERN STATES.

The Willamette Pulp and Paper Company, Oregon City, Ore., has completed its new mill. The machinery is to be driven by electricity, which will be generated on the premises.

The Dells Paper Company, Eau Claire, Wis., has contracted with Olin Scott, of Bennington, Vt., to furnish it with two more of his large "New England" pulp grinders.

Work on rebuilding the plant of the American Straw Board Company, at Barberton, Ohio, has begun.

All of the mills of the Columbia Straw Paper Company in the Western States are reported to have shut down.

SOUTHERN STATES.

The Antietam Paper Company, Hagerstown, Md., bought recently twenty-two carloads of canceled postal notes from the United States Government, and are working them in its mill as paper stock. A Government official superintends the work.

It is proposed to build a paper mill at San Marcos, Tex.

It is reported that a paper mill is to be built at San Antonio, Tex.

The Singerly Pulp and Paper Company, Elkton, Md., has posted notices that the wages of their employees at the Record Pulp Mill will be reduced on February 1 from 10 to 25 per cent.

The P. W. & B. Railroad Company has put a switch across the main street at Elkton, Md., and close to the Record Pulp Mill. Some delay has been caused in the contruction of the trestle work for the use of the mill; but this having been overcome the work will be completed without delay. When completed this siding will save the mill greatly in haulage.

American Paper Manufacturers' Association.

The mid-winter meeting of the American Paper Manufacturers' Association will be held at Delmonico's on Wednesday next, the business meeting beginning at 11 A. M. In the evening there will be a banquet at the same place, for which elaborate preparations are being made. The tickets are $5 each and have sold rapidly, so that a large attendance is assured. Those who have not ordered their tickets should do so at once, in order to simplify the seating arrangements. Among the speakers who have promised to be on hand are Mayor Strong, Hon. H. W. Cannon, Gen. Horace Porter and I. H. Bromley.

At the banquet not only will there be a large attendance of manufacturers, but the dealers, &c., in the various cities are expected to be present in full force.

Obituary.

THOMAS LINDSAY.

Thomas Lindsay, of the Stewart Paper Company, Brookville, Ind., died on January 21, at the age of sixty-nine.

When four years old he came to America from Fife, Scotland, where his ancestry had been paper makers for generations. One of his relatives operated the first paper mill in the United States.

Although foreign-born, Mr. Lindsay was most intensely American in thought and action.

He operated paper mills at Montville, Norwich and New Haven, Conn., and at Wilmington, Del. In 1867 he went to Brookville and took charge of the mill which he operated at the time of his death.

For twenty years the product of his mills has been furnished to the Cincinnati *Enquirer*.

Mr. Lindsay's career was characterized by indomitable pluck and perseverance, and he had devoted his life to his business. Frequently, when little checks liable to happen in paper mills would occur, he would remain for days at the mill. For the past two years he has been steadily breaking down.

The town of Brookville owes much to Thomas Lindsay, as there was a period when his was almost the only concern employing men at steady wages.

Many cosey homes in the town were built by the steady employment and generous wages paid by Thomas Lindsay.

He leaves a widow and one son, who will probably continue the business.

Arthur Brown, a well-known lithographer, whose place of business is at 116 Duane street, New York, died on Friday, January 18, from a shock caused by an accident. Mr. Brown was coming out of his house when he slipped and fell, breaking several ribs. He was past master of Ocean Lodge No. 156, F. and A. M., and was also a member of the Veteran Association. The funeral took place from his late residence, 200 Union street, Brooklyn, on Sunday evening, January 20. He was sixty-eight years of age.

Accidents.

O. C. Conners, an employee of the Glens Falls Paper Mill Company, Glens Falls, N. Y., fell a distance of fifteen or twenty feet from a wood pile, last week, and was picked up unconscious, and with a big gash in his head.

Three accidents occurred in one day lately at the mill of the Hudson River Pulp and Paper Company, Palmer's Falls, N. Y. James Sanger had his face badly lacerated by a flying piece of iron while he was engaged in breaking up scrap with a sledge hammer. Edward Ramsey was injured by a block of wood, which struck him while in the woodroom, and A. Schwabe lost the toes of his right foot by having them badly crushed.

A heavy skylight over the machine room at the mill of the Glens Falls Paper Mill Company, Glens Falls, N. Y., fell one day last week onto the machine and caused over $400 damages.

Fires.

Wm. Rees & Co., printers, Keokuk, Ia., have had a loss by fire.

Albertsen & Koch, dealers in paper hangings, &c., Pekin, Ill., have been damaged by fire.

Lee & Co., publishers of the *Enterprise*, Barnesville, Ohio, have had a loss by fire amounting to $1,700; insured for $1,700.

The paper mill of Michael J. Lawless, Marcellus, N. Y., was destroyed by fire on January 19. Loss, $20,000, with no insurance.

General Notes.

During the week following January 28 the Crocker Manufacturing Company, Holyoke, will run its specialties in the following described colors: canary, fawn, cherry, blue granite, pearl, light buff, yellow, corn, terra cotta and mandarin. Orders should be sent in early.

The receiver of the United Paper Company has given notice that his accounts have been filed with the Clerk of the Court of Chancery of New Jersey, and that the report of the trustee of the trust mortgage has also been filed. These reports can be inspected at the office of the Chancellor, No. 1 Exchange place, Jersey City. A motion to confirm the report of the receiver will be made on February 4.

Execution for $20,866 has been issued against Will F. Jordan, publisher of the *Sunday Telegram*, Harrisburg, Pa.

Counterfeit $10 United States legal tender notes, purporting to be issued under the act of March 3, 1863, series of 1880, check letter B, W. S. Rosecrans, Register, S. E. H. Nebeker, Treasurer, portrait of Webster, small pink scalloped seal, have made their appearance in the West.

The New York Filter Company, 145 Broadway, New York, notifies the public that its patent for the use of a coagulant, in a continuous process or flow of water in connection with a filter, has been sustained by the U. S. Circuit Court of Appeals, and that all infringers are liable for damages.

An attachment for $3,156 has been laid upon the property of the New York Filter Company, in the city of New York, on the ground that the company is a New Jersey corporation, the claim being for alleged balance due to Cornell, Hiscox & Underhill for merchandise and on a note of the company.

A double belt will stretch $\frac{47}{100}$ of one per cent. of its length before requiring to be tightened, when subject, according to ordinary rules, to a total load of 111 pounds per inch of width, and giving an effective pull of 65 pounds per inch of width. A double belt with to ta load of 54 pounds, effective pull of 26 pounds, stretches $\frac{51}{100}$ of one per cent. before requiring tightening.

At Hornsey, a London suburb, the dust of the district is collected and burned, leaving considerable residue in the shape of clinker, and the coarser of this is found to make excellent material for road making, and will easily sell at 2s. per load. The finer clinker is put in a mortar mill, and mixed with lime or cement, is used as mortar and grouting, but there is still a good deal left, and this, it is stated, mixed with a fair quantity of Portland cement, makes excellent paving stones at about half the cost of those purchased from the various patent stone makers. A section of Southwood Lane, Highgate, at the entrance to the railway station, has been laid with this paving. It is said to be very hard and to wear exceedingly well.

An eminent engineer once remarked that if he should paint the stack of a locomotive a light sky blue he could probably show a saving of 10 per cent. in fuel as the result thereof. This means, says *Power*, that when we have some new device to try we watch all of the elements connected with it with the closest attention; we check all wastefulness of material and labor, and when we find that the result is a 10 per cent. drop in cost it is more than probable that if we had paid the same attention to our work before the improvement was attached there would be a marked saving.

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Negligence and Damages.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

Whoever does an illegal act is answerable for all consequences which ensue in the ordinary and natural course of events, although those consequences may be immediately and directly brought about by the intervening agency of others, provided the intervening agents were set in motion by the primary wrongdoer, or provided the acts causing the damage were the necessary or legal and natural consequences of the original wrongful act.

This gives the basis for the right of recovery in all actions against railroad companies, and other corporations similarly situated, where parties have been injured in wrecks, collisions, &c. The illegal act is neglect, either on the part of an employee of the corporation, or the fact that it has failed to use the safest mechanical devices for the operation and movement of its trains, or has failed to see that what is used, either in its rolling stock or roadbed, is in safe and proper condition. The corporation is liable on the principle that he who does a thing by another, does it himself.

A question frequently raised in such suits for damages is whether the condition of the party suing is the result of the injury received by the negligence of the company and its employees, and whether it is not too remote a consequence from such negligence to form an element of damage. If so, it should be excluded from the consideration of the jury. It is not simply because the relation of cause and effect may be somewhat involved in obscurity, and therefore difficult to trace, that the principle obtains that only the natural and proximate results of a wrongful act are to be regarded.

It is only where there may be more direct and sufficient cause of the effect complained of that the more remote cause will not be charged with the effect. If a given result can be directly traced to a particular cause as the natural and proximate effect, why should not such effect be regarded by the law, even though such case may not always and under all conditions of things produce like results.

It is the common observation of all that the effects of personal physical injuries depend much upon the peculiar conditions and tendencies of the persons injured, and what may produce only slight and comparatively uninjurious consequences in one case may produce consequences of the most serious and distressing character in another. This being so, a wrongdoer is not permitted to relieve himself from responsibility for the consequences of his act by showing that the injury would have been of less severity if it had been inflicted upon some one else of a large majority of the human family. Hence the general rule is that in an action of tort, that is, one based on a wrongful act, the wrongdoer is liable for all of the direct injuries resulting from his wrongful act, and that, too, although the extent or final nature of the resulting injury could not with certainty have been foreseen or contemplated as the probable result of the act done, or neglected to be done.

In conformity with the above principles and line of reasoning damages have been allowed by the courts where a party injured in a railroad wreck died from cancer, the jury finding that the disease was developed by the injury and death afterwards resulted. In this they probably reached the limit, as it is generally agreed that cancer is inherited, and that the same injuries would not have resulted to anyone else not affected in like manner by heredity.

Where a passenger received no bodily injury from an accident caused by negligence, but was made insane by excitement, hardship and suffering, it was held that the railroad company was not liable in damages, on the ground that insanity is not a probable or ordinary result of such an accident; but where a passenger was wrongfully ejected from a train and walked back several miles to a station, was caught in a storm and illness resulted in consumption and death, it was held that the consequences of being caught in the storm and the disease resulting therefrom were not too remote to enter into the computation of damages.

Where damages are sought to be recovered for results seemingly remote, care must be taken in making the allegations of the petition on which the suit is founded, so that the fullest testimony may be admissible in proof of such claims; for however rightful may be the claims, proof of same is sometimes shut out from failure to set them forth at the commencement of the action, and consequently they do not come before the jury—that bête noir of corporate existence.

The tensile strength of iron at 400° below zero is just twice what it is at 60° above. It will take a strain of 60 instead of 30 tons to the square inch.

The Law of Invention.*

By Horace Pettit, of the Philadelphia Bar.

(Continued.)

It will be interesting to note the interpretation placed by the highest Court of Appeals upon the question of "patentable invention" in some of the recent cases, for the purpose of gaining an insight into the rules observed by the Supreme Court of the United States in the determination of this question. A careful examination evinces the fact that the judges are governed to a very large extent, if not entirely, by the rules which governed their worthy predecessors in deciding some of the leading cases where this question was involved. The tendency of the courts still to be governed by "practical results" in cases somewhat doubtful is apparent in the recent decisions; never substantiating the patent, otherwise invalid, on account of the practical achievements and the commercial success of the invention, but employing the fact of practical success, in cases otherwise doubtful, as an additional reason for supporting the validity of the patent.

One of the most interesting decisions of the Supreme Court of the United States within the last year or two is that of Washburne & Moen Company *v.* The "Beat-'em-all" Barb Wire Company, otherwise known as the barb wire patent cases, reported in 143 U. S. Supreme Court Reports, p. 275, &c., decided February 29, 1892. This decision reversed the finding of the court below, and held the Glidden patent No. 157,124, November 24, 1874, for an improvement in wire fences, to be valid.

I will be pardoned if I refer to this case somewhat in detail, which I do, believing the facts connected with the attempted anticipation of the patent to be instructive.

The claim of the patent is as follows:

"A twisted fence wire having the transverse spur wire D bent at its middle portion about one of the wire strands *a* of said fence wire, and clamped in position and place by the other wire strand *x*, twisted upon its fellow, substantially as specified."

The appeal was from the decree of the Circuit Court of the United States for the Northern District of Iowa, which held that the patent was invalid. The bill filed relied upon certain decrees obtained in the courts of other districts against other defendants,

* From Journal of the Franklin Institute.

and which were claimed to have established the validity of the patent. The main defence was that the invention was anticipated, and that the invention, in view of the anticipations, was not patentable.

When it is recollected to what an enormous extent this wire fence has been employed in the last few years throughout the vast plains of the West, as well as to a very large extent throughout the East, and when the fact is appreciated that the boundless plains by this means have been readily subdivided into large pasture fields for cattle, the fence operating as an effectual means for retaining the cattle in defined limits, and from straying perhaps many miles from the ranches to which they belong, as they formerly did, it will be understood why the case was so hotly contested.

What did the patent cover? Nothing but a short transverse wire, coiled at its central portion about one of the wire strands of a twist of wires with its free ends projecting in opposite directions, the other wire of the strand serving to bind the spur wire in position to prevent lateral displacement. It was on this simple little contrivance that the great minds of the judges of the Supreme Court of the United States were called upon to pass. The defendants did not deny that they made a fence similar to that of the patentee. It was admitted that they did. A vast amount of testimony, documentary and oral, was produced. The strongest evidence in the case, to my mind, was the alleged anticipating patent granted to Michael Kelly, February 11, 1863, which was over five years in advance of the date of the Glidden application. Kelly took small, flat pieces of iron or steel, each provided at its centre with a hole the size of the wire, so that they could be introduced on the wire. These pieces were strung on the wire at distances about 6 inches apart, and were compressed laterally by a blow of the hammer so as to flatten the hole and lock, as it were, these spurs upon the wire. He described the spur, or thorn, as being provided mainly upon a single strand of wire, though he said in his specification, and illustrated the construction in one of the drawings: "I can, where it is desirable to increase the strength of the wire, lay another wire of the same or a different size alongside of a thorn wire, and can twist the two by any suitable mechanism." He did not say that the twisting of these two wires was for the purpose of holding the spur in position and preventing lateral displacement, which Glidden said in his patent would be the effect of the twisted wires, and the purpose for which he, Glidden, employed the additional wire; but Kelly employed it, as he states, "to increase the strength of the wire." It will be clearly seen, however, that even though Kelly did not say so, the effect of the wires thus twisted must have been the same, and must have aided in holding the spur in position and preventing lateral displacement.

Mr. Justice Brown said, inter alia, in deciding the case: "The vital difference in the two patents is in the shape of the barb itself: In one case (Kelly) a flat bit of metal is used of an elongated diamond shape, through which a hole is pierced, by means of which it is strung upon the wire, requiring something more than the aid of a second wire twisted upon the first to render it immovable. In the other, the barb is a piece of wire coiled about one of the fence wires, and held rigidly in place by the twisting of another wire about the first." Substantially, the difference between Kelly and Glidden was that Kelly made his spur out of a piece of flat metal with a hole in the centre, placing it between two strands of twisted fence wire (in the alternative construction) and hammering down the sides to more firmly lock it in position, while Glidden made his spur out of a short piece of wire, giving it one or two twists around one of the strands of the fence wire and holding it in position from lateral displacement by the other twisted strand of fence wire.

This brings us down to what the Supreme Court of the United States construed to be invention in the early part of last year. It was more than the exercise of mechanical skill; it was more than calling into play the exercise of the constructive faculties. In the opinion of the court, it required the employment of the inventive faculties.

(To be continued).

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* * * "In some of the plants of the corporation defendant settling tanks are used between the introduction of the coagulant and the filter bed. IN THOSE PLANTS THE METHOD OF THE PATENT IS NOT APPROPRIATED AND THERE IS NO INFRINGEMENT."

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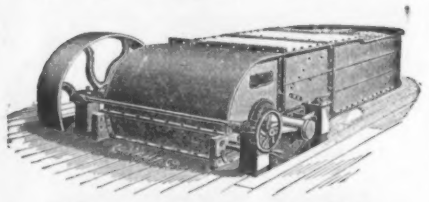

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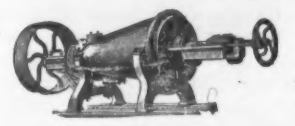

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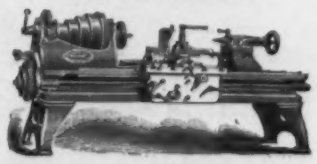

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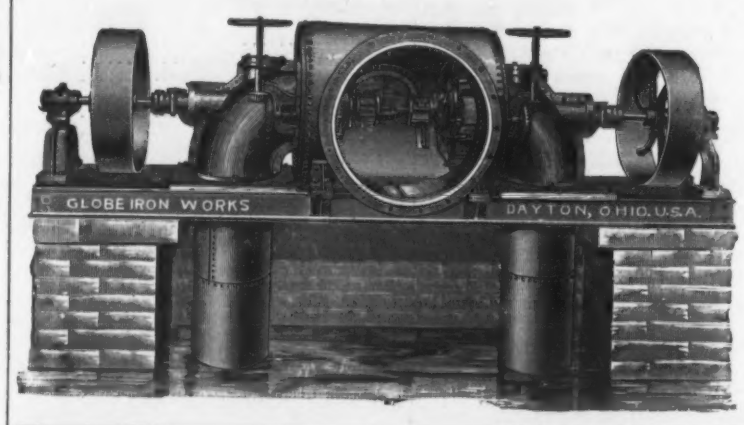

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TEST OF A 45 INCH WHEEL—JULY 9, 1894.

	Head.	Rev. per Min.	Cu. Ft. per Sec.	Horse Power.	Per Cent.
Whole Gate,	16.06	119.17	141.58	205.27	79.76
⅞ "	16.42	122.00	127.18	195.19	82.58
¾ "	16.78	117.33	112.60	175.74	82.18
⅝ "	17.03	111.33	98.12	149.99	79.31
½ "	16.88	118.67	82.07	118.40	75.53

TEST OF A 42 INCH WHEEL—JULY 14, 1894.

	Head.	Rev. per Min.	Cu. Ft. per Sec.	Horse Power.	Per Cent.
Whole Gate,	16.33	128.00	134.18	199.56	80.50
⅞ "	16.56	134.80	120.85	188.14	83.09
¾ "	16.59	129.33	104.85	162.89	82.77
⅝ "	17.13	125.25	92.76	142.40	79.21
½ "	17.48	121.00	70.80	98.85	70.60

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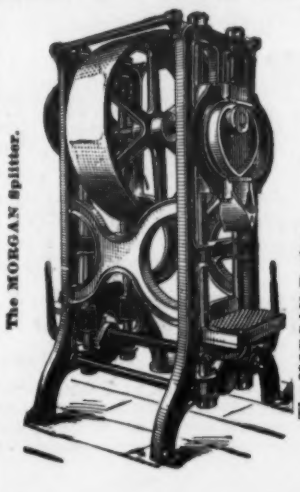
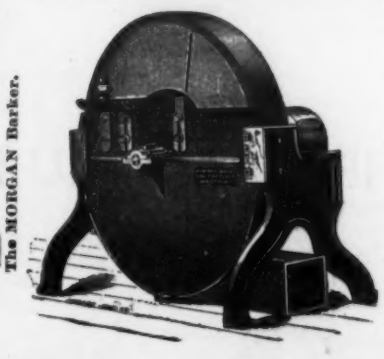

The MORGAN Splitter.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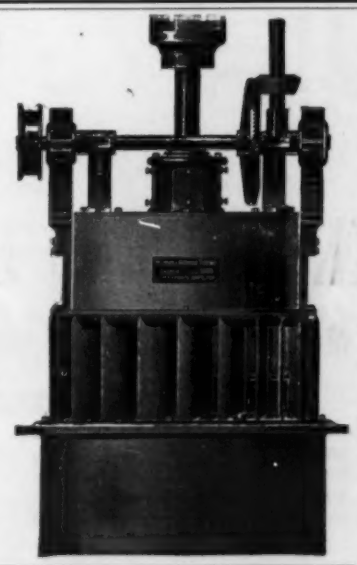

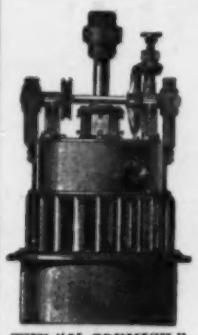
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Apparatus for Making Bleaching Powder.

This invention relates to the production of bleaching powder obtained by the saturation of calcium hydrate with chlorine, and it has for its object the provision of means whereby the operation may not only be carried on more rapidly but also more effectually and more economically.

It consists in the construction of the absorption tower and in combination therewith of a chlorine generator, a wash vessel and a purifier.

Figure 1 is an elevation partly in section of the apparatus. Fig. 2 is a transverse section of the absorption tower taken through one of the chambers.

The apparatus consists of a chlorine generator, A, a wash vessel, B, a purifier, C, and an absorption tower, D. Any well-known chlorine generator may be used, and the chlorine may be obtained from any appropriate material, as for instance, from the binoxide of manganese and hydrochloric acid.

The chloride is obtained by the electrolytic treatment of hydrochloric acid in a continuous and economic manner, and the chlorine exhaust branch *d* is connected by a pipe, *d'*, with the wash vessel B.

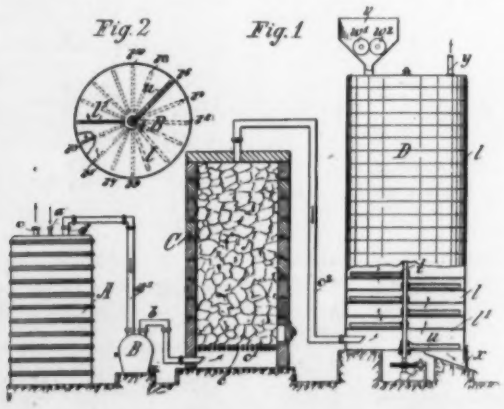
The hydrogen exhaust branch *c* of the electrolyzer A is connected with a suitable gas holder or with a carburetor, so that the gas may be utilized either as a heating or an illuminating agent, the hydrochloric acid being supplied to the electrolyzer through the branch *a*.

The wash vessel B is connected by a pipe, *b*, with a chamber *c'*, formed below a perforated false bottom, *c*, or a grating in the lower part of the purifier, C, which is filled with binoxide of manganese so as to free the chlorine from the last traces of hydrochloric acid which may be carried over from the wash vessel. The upper end of the purifier is connected by a pipe, c^3, with the lowermost chamber of the absorption tower, D, the latter being divided by horizontal partitions into shallow absorption chambers, *l*, and in each of these partitions is a narrow slot, *l'*, the relative position of the slots in the partitions being such that the slots in the partitions of two adjacent or contiguous chambers will not register with each other, as shown in full and dotted lines in Fig. 2.

The absorption tower is preferably cylindrical in cross-section, a shaft, *t*, extending centrally therethrough and carrying drags or scrapers, *u*, preferably only one for each chamber, these scrapers carrying the material around over the slots in the partitions and causing it to fall from chamber to chamber, and stirring or turning the same over at the same time so as to bring the chlorine into more intimate contact with the particles of calcium hydrate. Inasmuch as the slots in the partitions do not register with each other the chlorine traverses a zigzag course—that is to say, it passes completely across each chamber before it can pass up into the next chamber above. For instance, let it be supposed that l', Fig. 2, indicates the slot in the uppermost partition, *l*, then l^2 would be the slot in the partition next below, l^3 the slot in the next succeeding partition, and l^4, l^5, l^6, l^7, &c., those in the successive partitions below, so that the chlorine coming into the lowermost chamber will circulate through each chamber in succession until it reaches the outlet *y*.

The calcium hydrate is preferably supplied in the pulverulent form to the upper chamber of the absorption tower, and the supply is controlled by means of feed rolls, and from that chamber it gradually passes down from chamber to chamber by falling through the slots in the partitions, being carried completely around the chamber by the scrapers or drags, *u*, and is at the same time turned or stirred. In this manner the hydrate is exposed for a longer time to the chlorine before it reaches the lowermost chamber than would be the case if it were simply allowed to drop from the top to the bottom of the tower. On the other hand, the hydrate, being continually kept in motion and turned over and over, is brought into more intimate contact with the chlorine, whereby the absorption is greatly promoted. If the absorption tower is of sufficient height all of the chlorine which may be supplied will be absorbed by the lime. It is, however, not always practicable to erect towers of the required height to produce the bleaching agent on a large scale. To this end a number of such towers, the combined heights of which would be equal to the required height of a single tower, may be connected in series, the first of the series being connected with the purifier C, the exhaust pipe *y* at the top of each tower being connected with the lowermost chamber of the tower next succeeding. The bleaching powder is removed from the lower chamber of the absorption tower at *x*, the discharge opening being provided with a suitable gate.

It will be observed that by means of this apparatus the production of bleaching powder is continuous or uninterrupted, and that the quantity of the bleaching powder produced will simply depend upon the dimensions or capacity of the constituent elements of the apparatus or plant.



APPARATUS FOR MAKING BLEACHING POWDER.

Heating Value of Coals.

With the increase of electric lighting, and other plants which necessitate the use of coal for steam raising, the necessity of using coal of the best quality as regards the duty obtained from it becomes apparent, and particularly where carriage is high. Clean coal also is a necessity where due regard to economy is paid, as that fuel which holds more than a normal quantity of ash is expensive, owing to the extra labor and carriage, and, in fact, in some places, the question of ash removal is more troublesome and costly than any difference in cost can compensate for.

A pound of very good coal is equivalent to about 14,000 units of heat, and would have about five per cent. of ash, or perhaps less, some variation being found, of course, in the different varieties of coal. Theoretically, all but the ash should be changed into a gaseous state in the boiler, but this can scarcely be accomplished in practice without some method of forced draught; but with a good fireman the loss of fuel is kept down to a low point, the ultimate reduction of all combustible matter being almost impossible while steam is being taken off with any rapidity. Where fires have to be cleaned out frequently there is a considerable loss of steam, and not only of steam, but of fuel also, as naturally the fireman has to drive his fire to keep his engines working, and the fuel is not used to the best advantage when such is the case, the percentage of heat units utilized for actual evaporation being much reduced.

When in a proper condition and with proper fuel the boilers should absorb the greater part of the heat given off by the fuel, the gases passing to the chimney being comparatively cool, but the heat of these gases will vary with the different classes of boilers, as a matter of course. The fuel, if converted into its gaseous forms, will do certain duty, while leaving behind only those portions which are incombustible, and which can to a great extent be removed in the form of fine ash falling through the fire bars. Where there is much siliceous matter there are clinkers, and these hinder the draught, but if they are not in too large a quantity they are not seriously detrimental with a good fireman; still, a friable ash is more easily dealt with.

Coming to the question of the cost of coal, we have to take a good coal as a standard, and after adding the expense of handling from wagon to furnace and the cost of removal of waste to that of the coal, a price basis can be established, and taking the calorific value of the coal it is easy to more or less accurately determine the value of other coals. Taking the cost of handling a good coal at 2s. a ton, at which 6d. can be put to the ashes, and assuming the price of the coal itself is 16s. per ton, the basis would become 18s., and each pound may be calculated as giving 14,000 heat units. For all ordinary calculations the following values may be taken:

	Value.	Heat units per pound.
Welsh steam coal	1000	14,000
Newcastle coal	885	12,390
Derby and Yorkshire coal	837	11,718
Lancashire coal	877	12,278
Scotch coal	851	11,914
Irish anthracite	1088	15,232

Taken as above with Welsh coal as a base, we find the money value of each heat unit to be 0.00000612245d., which would be too small an amount to calculate from, the better plan being to calculate the matter by simple proportion, and this gives the following values per ton:

	Shillings.
Welsh	18.00
Newcastle	15.93
Derbyshire and Yorkshire	15.06
Lancashire	15.78
Scotch	15.32
Irish anthracite	19.58

This, of course, assumes the coal to be clean, and with only the normal amount of ash, but should any excess of dirt be present, then the values will be proportionately reduced. If this reduction is not made, the cost of steam power is very greatly increased, labor alone being increased at a vastly greater rate than the calorific value of the coal decreases when the ash exceeds 10 per cent.

A contemporary lately stated that anthracite waste if broken and sized to certain meshes would "give off nearly as much heat as clean anthracite," but it does not state the proportions of actual combustible matter in the waste, but from the way the matter is put before the readers it would seem that it was better and cheaper to burn waste.

Quite recently attention was called to some coal which was being sold by a hawker at 1s. 3d. per cwt. (equal to 25s. per ton), and out of curiosity he bought 1 cwt. This was carefully burned and everything which would burn removed, with the result that 33½ pounds of ash were left. Practically, this is 30 per cent., and compared with the results similarly obtained with 1 cwt. of good kitchen coal, delivered at 21s. per ton, and giving 9 pounds of ash, or practically 8 per cent., it would appear that the purchaser of the former fuel lost very considerably over the transaction, as he would be paying at the rate of nearly 31s. for what the writer was paying 21s., when the caloric duty is considered, while a lesser bulk of material would be supplied, owing to the greater specific gravity of the inferior article.

Where automatic stokers are used in conjunction with mechanical fire bars, it is very desirable that the coal used should be properly sized and cleaned, and air dried, washed peas or beans would probably give the best duty, while the fires would keep clean for comparatively long periods. Lucotubed boilers would probably give the best results with nuts or cobbles, owing to the somewhat restricted fire box area, the necessary supply of oxygen often being more or less reduced by ashes and the clogging of the fire bars. Theoretically, plenty of area is allowed for the admission of sufficient air, but in practice the matter is often different. Clean, granular fuel is therefore best for giving the greatest duty.—*W. J. May, in the Colliery Guardian.*

On January 11 Judge Bischoff, of the Court of Common Pleas, New York, granted an order for the dissolution of the North American Publishing Company. The assets are $1,982, with no liabilities. The company failed two years ago.

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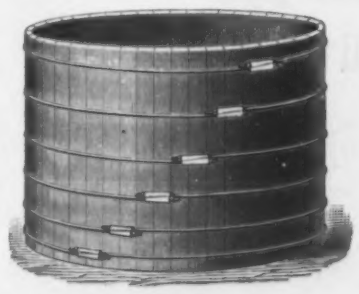

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Wilder & Co.	Ashland, N. H.	1	..
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Watertown Paper Co.	Watertown, N. Y.	3	3
Alpena Sulphite Pulp Co.	Alpena, Mich.	4	2
Hollingsworth & Whitney	Winslow, Me.	4	3
Fulton Paper Co.	Fulton, N. Y.	2	2
Lyonsdale Paper Co.	Lyonsdale, N. Y.	1	..
Newton Pulp Co.	Newton, Nova Scotia	4	..
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Lewis, Slocum & Lefevre	Beaver Falls, N. Y.	4	..
Racquette River Pulp Co.	Potsdam, N. Y.	4	3
D. T. Lawless	Penfield, N. Y.	1	..
Green Mountain Pulp Co.	Middlebury, Vt.	2	..
Morgan Falls Pulp Co.	Morgan Falls, Nova Scotia.	4	..
Riordon Paper Mills	Merritton, Ontario.	4	..
Parsgon Paper Co.	Eaton, Ind.	1	..
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S. D. Warren & Co.	Cumberland Mills, Me.	1	..
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Manufacturing Investment Co.	Appleton, Wis.	1	..
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A Patent Case Decided.

An important decision in relation to the mechanical filtration of water has just been rendered by Judge Wallace of the United States Court of Appeals. The use of alum or similar coagulants in water filters has been decided to be an infringement upon a patent owned by the New York Filter Company, provided the alum is admitted to the filter simultaneously with the passage of water to the filter. Where the combined coagulant and water pass to a settling basin before going to the filter, the decision states that there is no infringement. The patent in question was issued on February 19, 1884, to Isaiah Smith, and was entitled, "A Method of Purifying Water," and is now owned by the New York Filter Company. The history of the case is as follows:

In April, 1887, the Newark Filter Company, which then controlled the patent, filed a bill of complaint in the United States Circuit Court, District of New Jersey, against the National Water Purification Company, alleging infringement of the patent, asking for a perpetual injunction and for $50,000 damages. Shortly afterward the Newark Filter Company became the Hyatt Pure Water Company, and in June, 1888, it began suit in the United States Circuit Court for the Northern District of Illinois against another alleged infringer of the same patent, the Jewell Pure Water Company.

The second suit was dismissed at the complainant's cost, on February 13, 1889. On July 27 following a disclaimer to the original Hyatt patent was filed, striking out a part of the specifications, in which certain broad claims were made. The original suit between the Hyatt and National companies was continued until their consolidation, early in 1892, as the New York Filter Company. The American Filter Company, of Chicago, was also included in this consolidation, and in addition the new company now holds the patents on the filter known as the Blessing, and certain patents on the æration of water, formerly controlled by the United States Pure Water Company.

On May 1, 1893, the New Yo.k Filter Company again brought suit alleging infringement in the case of a Jewell filter in use at the Murray Hill Turkish Baths, New York. Meanwhile the Jewell Pure Water Company had become the O. H. Jewell Filter Company. On June 9, 1894, Judge Shipman, of the United States Circuit Court for the Southern District of New York, rendered a decision in favor of the New York Filter Company. The case was carried to the United States Circuit Court of Appeals, a stay being granted meanwhile by Judge Shipman. On November 1 and 2 an argument on the appeal was made before Judges Wallace, Lacombe and Coxe, and on January 9, 1895, an opinion was filed by Judge C. J. Wallace affirming the decree of the Circuit Court.

Judge Wallace states very plainly that in using alum in filters without the intervention of settling basins there is an infringement, but that with such basins there is not.

The claim allowed in this patent was as follows:

"The method hereinbefore described of arresting and removing the impurities from water during an uninterrupted passage of same from a supply pipe into a filtering apparatus, thence through a filter bed contained therein, and out through a delivery pipe leading therefrom, which method consists in introducing into the water simultaneously with its passage to or into the filter a substance which will sufficiently coagulate or separate the impurities to facilitate their arrest and removal by the filter bed, thus obviating the necessity of employing settling basins."

As will be seen, the claim specifies no chemical to be used as a coagulant. The specifications, however, refer several times to persulphate or perchloride of iron or "other coagulating agent" or words similar to the three quoted, and in a paragraph stricken out in a subsequent disclaimer, already mentioned, permanganate of potassa was named. This disclaimer was as follows:

"I do not confine myself to the employment of persulphate or perchloride of iron or permanganate of potassa, but make use of any other suitable agent which is capable of coagulating the impurities of the liquid and preventing their passage through the filter bed. Neither do I limit myself to any particular proportions or quantities of the coagulating agent, as they may be varied according to circumstances and the character of the liquid to be treated. Nor do I confine myself to any particular liquids, although I contemplate chiefly the purification of water in large quantities."

In this suit the defendants had urged that the Hyatt patent was null through lack of originality, and that, whether null or not, the disclaimer limited the patent to the two salts of iron named. After reviewing the case and referring to some references to earlier patents, Judge Wallace says, in answer to the first point:

"The patent in suit describes a departure from anything which appears to have been done or known in the prior art, so far as appears by the record."

The departure consists in the discovery, in the language of the judge, "that the agglomerating action of the coagulants could be obtained without waiting a considerable time for precipitation, or during the passage of the water through the filtering bed.'

Judge Wallace's conclusions in regard to the disclaimer and his summary of the case are as follows:

"The patent after the disclaimer is to be read exactly as though the recital had never been inserted. Thus read, it is clear that the claim covers the use of any coagulant having similar properties to the salts of iron, which was a recognized equivalent.

"As thus construed, the infringement of the claim by the defendants is established, although they use alum as the coagulant instead of the salts of iron. In some of the plants of the corporation defendant settling tanks are used between the introduction of the coagulant and the filter bed. In these plants the method of the patent is not appropriated, and there is no infringement.

"The decree of the Circuit Court is affirmed with costs."

This decision applies to all companies or persons making or using mechanical filters in which alum or a similar coagulant is used. Wherever the water receives the coagulant as it passes into the filter, the patent is infringed, but if settling tanks are employed, in Judge Wallace's words, "there is no infringement."

Waste Paper in England.

One of the large dealers in waste paper furnished a press representative with the following details concerning the disposal of waste paper:

"That van load you see going out now consists of 3 tons of magazine paper for buttermen and grocers to wrap their goods in. I get rid of several tons of that a week. This colored paper you see here is returned to the mills and gets remade into colored paper again, while these half dozen sacks are full of pattern papers and go to America. All the letter waste and a fair proportion of the newspapers go to America; and in the case of the latter they are reduced to a pulp and made into paper again. Ten thousand tons of this material leave London for the States every year. A very large quantity of newspaper waste goes to Bombay, Madras, Ceylon, China and Constantinople; in fact out of every 100 tons leaving London 80 find their way to these places, where they are used for packing up goods. You will notice that those bales are bound with red strips of iron 1½ inches in width. This is to indicate to the natives, who cannot read English, that the contents are newspapers. Linen is packed in the same way, only the red band is 1 inch wide. I do not sell direct to the natives, but to English merchants in these parts, who in turn retail the paper to their customers.

"Paper that is made from wood pulp does not lend itself to reconversion into paper of a similar quality, but is made into a common material, with which good color is no object. Quite the finest paper to be obtained is bookbinders' clippings, which, being free from any ink of any sort or kind, require no chemical process before they are ready for reducing to pulp. The wrapper paper that goes round reams of stationery and so forth I buy from stationers and sell again to booksellers. Yes, I receive some thousands of ledgers, as you may see for yourself. The insides are torn out and used for making into paper. Of leather-board I get about twenty tons a week, and all this goes to America, while more than twice that quantity of cuttings from cardboard and strawboard users passes through my hands in the same time. No, those are not soup tickets, they're pawn tickets, and I get about a hundred tons of those a year. They are made into what we term 'middle,' and see the light again in the shape of pill boxes, playing cards and pawn tickets.

"The railway companies do a big trade with their tickets, all of which are used up in England. Why don't the English firms build machinery that would do what the American machines do? Why, it wouldn't pay them, unless they were right alongside the waste paper depot. You see, it costs 7s. a ton to send waste paper to New York from London, and 14s. 5d. from London to Manchester. Before the Ship Canal was opened it used to be 18s. 8d. per ton. I remove waste paper from the large publishing firms by contract, and only this morning received thirty tons from one house alone. On an average about forty tons of stuff comes in here to be sorted and packed up in bales for export every day, and the same amount passes out. Thus you will see we get through something like 12,000 tons in a twelvemonth."—*The Paper and Printing Trades Journal.*

Pulp Wood Conveyors.

The accompanying illustration represents a system of conveyors installed at the mills of the Dexter Sulphite Pulp and Paper Company, Dexter, N. Y., by the Jeffrey Manufacturing Company, of Columbus, Ohio, for the rapid and economical handling

PULP WOOD CONVEYORS.

of pulp wood, ranging from 6 to 36 inches in diameter, 2 to 8 feet long. The prominent feature of this plant is the Jeffrey cable conveyor rising at a gradual inclination from a point where it receives the pulp wood from a Jeffrey roller chain conveyor running at right angles and extending into the storage yard, a distance of fully 500 feet. It carries the pulp wood on the upper run to the yard for storage and conveys it back to the mill on the lower or return cable, thus doing double duty.

This conveyor is one of the largest of its

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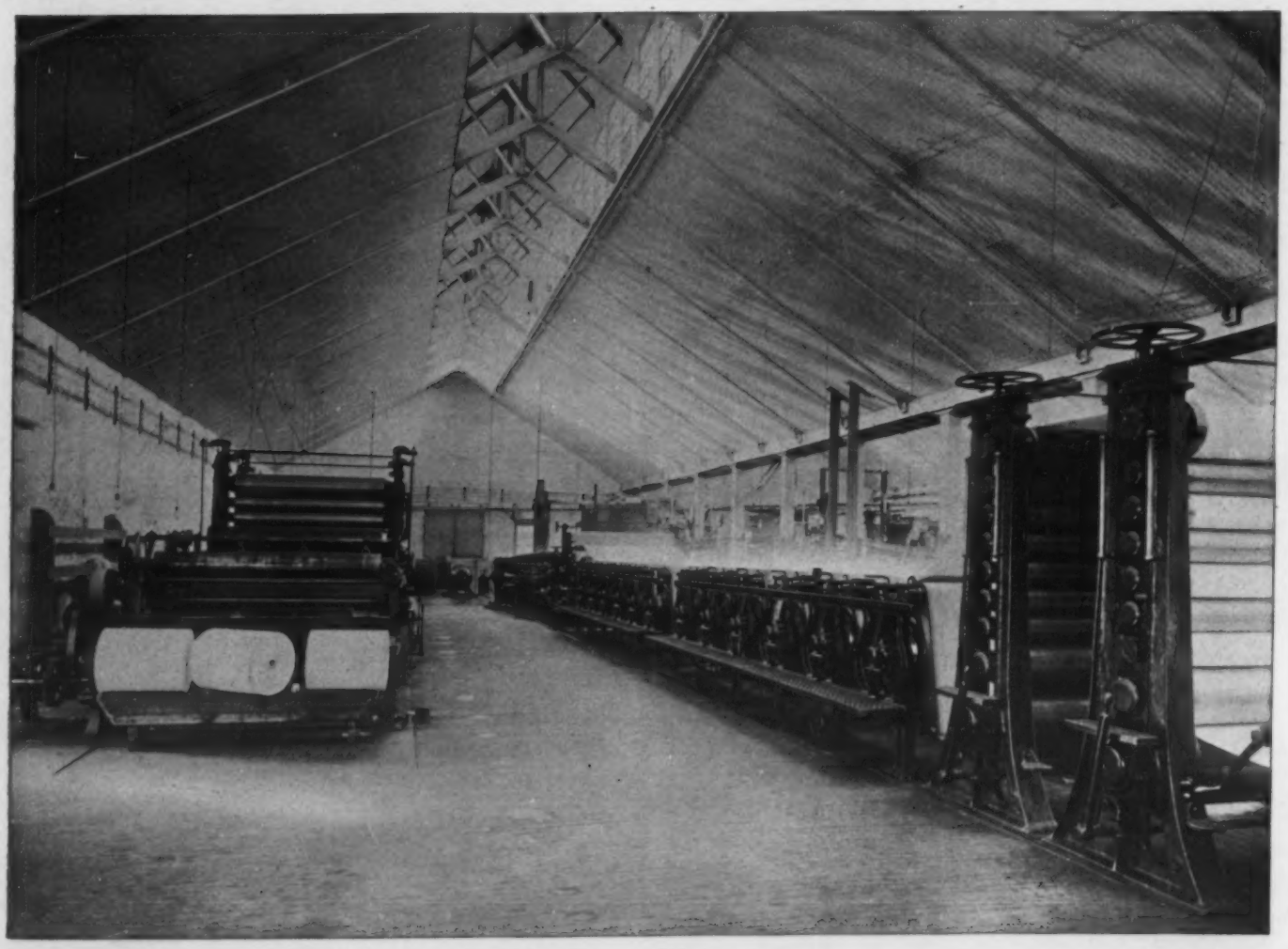

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kind in operation, some 1,100 feet of special seven-eighth inch steel cable being used in its construction, to which conveying and transmission clamps are bolted alternately, which travel in a V-shaped trough with a circular steel bottom, the pulp wood being carried by the conveying clamps referred to. The conveyor is successfully driven at the receiving end, the cable being kept at the proper tension by a special take up at the opposite end. The economy and convenience of this will be appreciated in that it saves the expense of a separate engine and boiler, also an attendant. The operation of this conveying system has been perfect from its completion, handling the pulp wood cheaper than could be accomplished by any other known method.

Cable conveyors are economical in first cost and maintenance, simple in construction, light but durable, and are especially adapted for long distance conveying. They have been successfully introduced by the Jeffrey Manufacturing Company for handling logs, pulp wood, chips, lumber and all refuse, such as occurs in pulp, saw and lumber mills, also coal, ore, ashes, sand, tan bark, &c. The varied and successful experience of the company in this line of work makes it competent to devise plans for and erect work of this kind, and parties who are desirous of reducing operating expenses are invited to address the company for further particulars, as well as for its 1895 catalogue.

Elasticity and Resistance of Materials.

By Gus. C. Henning, M. E.

It may seem strange that in spite of the general use of timber and metals for many centuries, we do not yet know with absolute certainty the principles underlying the determination of their properties. The distribution of elastic stresses and strains is still doubtful in many cases of construction or design, and new investigations of various problems are made from time to time to settle doubtful points or formulæ. Not only are most formulæ deduced for a given case, and fail to apply to differing shapes, but experiments to prove them are surrounded with so many disturbing conditions that it becomes difficult to observe the behavior of material as affected by one condition only. Thus, for instance, although we can readily determine the elongation of a piece of material by experiment, we cannot from this knowledge determine the corresponding elongation of any other piece the three dimensions of which, viz., length, breadth and thickness, have different proportions from those existing in the first.

The actual resistance of special shapes, such as columns and plates, is not more readily determinable than the elongation.

In order to more clearly define the behavior of materials in different shapes, Prof. C. Bach has recently published a book on "Elasticity and Resistance,"* the second edition of which is just out.

In this edition considerable matter has been added, the chapter on resistance of flat plates being of considerable interest. Although flat plates of different shapes are in most common use, more particularly of round and elliptic shape, as man and hand hole plates for cylinders and boilers, their resistance has never been thoroughly investigated, and design has followed the rule of thumb rather than accurate calculation.

In order to simplify calculations of elastic strains and changes, and to put these determinations on a more rational basis, he adopts a new constant, viz., coefficient of elasticity, as against the abstract idea "modulus of elasticity." None of the constants of nature are based on anything but experiment and reason, such as all coefficients of heat, light, electricity and others. When it is asked, how much will a bar expand under the influence of n degrees rise of temperature, it is at once answered that for the material given it will be equal to the product of coefficient of expansion, the length and the number of degrees elevation of temperature. Similarly the elastic expansion due to stress (load) should be (logically speaking) equal to the product of the coefficient of elasticity, the load per unit of section and the length strained. This Professor Bach adopts as logical, and therefore says that the greater the coefficient of elasticity the greater should be the stretch of any material; hence to obtain this coefficient, divide the stretch produced in a bar of 1 inch sectional area under the effect of load of 1 pound, by the length of bar on which the stretch was observed, or,

$$E = \frac{l'}{L} \cdot \frac{a}{P} = \frac{l'}{L} \cdot \frac{1}{1},$$

in which

L = original length.
l' = increase of length.
a = cross-sectional area of bar.
P = load applied.

Using this coefficient will simplify formulæ and calculations, and is at the same time logical. The chapter on tension gives in a most precise and clear manner the behavior of materials when subjected to a pull. In it the effects of varying shape in the three dimensions are discussed, and the effect of variation of each is most clearly traced. Unusually well executed photolithos show the effect of such loading on various materials of different shapes. In fact, it may be stated that the illustrations throughout the book are, without question, the best that have ever been published. They are remarkably well executed, appropriate and characteristic. The method of covering the materials tested with a network of scribed lines, which show the changes of shape after action of the various kinds of stress, is a most appropriate one, and brings to light many effects which could not be so clearly shown in any other manner.

The general method followed of first making a theoretical analysis of the kind of stress considered, and then, after deducing formulæ, confirming and illustrating the same by actual experiments and tests, is most complete and satisfactory. The ocular demonstrations given are most convincing, and make the student feel that the author is a thorough master of the subject treated.

The proof of the fact that results of tests are only comparable when the experimenting is done on pieces of similar shape, so chosen that disturbing influences are almost entirely eliminated, is convincing and causes surprise that this should not have been recognized by the first writer on the resistance of materials, as well as by the early investigators. The mathematical work is so clear and simple that it seems strange that correct principles should not have been laid down by the first writer on the subject.

The chapter on compression demonstrates and illustrates the effect of frictional resistances along the faces of the material through which the loads are applied, and points out that the bearing materials (packing) may considerably affect the resistances and change of shape observed. It is also clearly pointed out that the compressive strength for constructive purposes is always the yield point of the material. The necessity of applying loads absolutely normal to the bearing faces and passing through the axis of the material is also nicely defined, and the effects of eccentric loads are analyzed and calculated.

The investigations of bending tests of cast iron and of crushing of hollow cast rollers are particularly interesting because they clearly point out that unfinished pieces of various shapes and under different loading do not show the same resistance as they would had they been planed or turned before test. In the latter case cast iron rollers turned showed 10 per cent. greater strength when finished than when the sand skim was not removed. To show that this difference in strength was not due to internal strains (shrinkage strains) cylinders were turned to one-half their original thickness, which would certainly remove all strain. Still, these thinner rollers showed about 10 per cent. more resistance than others of same dimensions, but unfinished.

The illustrations by actual tests prove the author's theoretical deductions in a most remarkable degree, and make his demonstrations very convincing.

The concluding chapters of the book, par. 60–64, relate entirely to the resistance of flat plates of various forms, and this work is entirely original and of great value; he considers the cases of circular, elliptic, square and rectangular flat plates.

The resistance of plates to various loads, local, distributed and internal liquid pressures, is very carefully analyzed, and the effect of clamping their edges so as to properly resist the various strains is also taken account of in a most thorough manner.

The lines of least resistance are, moreover, determined theoretically, and after all this actual plates of cast iron and lead are tested under various conditions, and the results of tests are clearly corroborative of his previous deductions.

The effect of clamping plates between packing rings with sufficient force to prevent leakage of the inclosed liquid, which applies the pressures, is proven by mathematical considerations and then demonstrated by actual tests.

In the case of a rectangular cast iron plate theory showed that the line of fracture should be located on the diagonal from corner to corner. Plates of various sizes and thicknesses all gave similar fractures, and actual resistances were found to agree very closely with the calculations, again showing that the formulæ as given were accurate and could be relied upon in designing.

The tests made by Professor Bach covered not only cast iron but also steel plates, and in all cases results agreed closely with his formulæ previously deduced. It is pointed out that plates of greater thickness may apparently show a lower resistance than those that are thinner; but this difference is shown to be due to the greater forces required to be applied to insure staunchness of the joint, stress being applied to plate by hydraulic pressure.

When steel plates are tested they become very much distorted, so that they are no longer flat, but arched, and in this shape they have, of course, much greater resistance than when in their original form.

The effect on holding down bolts in the case of rectangular plates is also clearly demonstrated and illustrated, and from this it appears that the corner bolts receive but a fraction of the load imposed on those toward the middle of the sides, and this again shows that in securing such covers the middle bolts should be drawn up much tighter than those at the corners.

In the case of square, circular and elliptical flat plates the tests showed results conforming much closer to theory.

The results of all of Professor Bach's experiments on flat plates prove uniformly that their resistance varies as the square of the thickness h, and not as the first power of the thickness.—*American Machinist.*

The horse power of a boiler is a very indefinite expression, and, without any other data, is useless in determining the size of chimney. Twice as much coal may be required to evaporate a given quantity of water in one boiler as in another, and twice as much water may be required per horse power in one engine as in another. In determining the chimney capacity the only satisfactory basis is the amount of fuel burned. Assuming that 4 pounds of coal per horse power per hour is burned, then a chimney 48 inches square for the given height will answer the purpose.

* "Elasticity and Resistance," by C. Bach, professor at Technical High School at Stuttgart. Second enlarged edition. Published by J. Springer, Berlin, in the German language.

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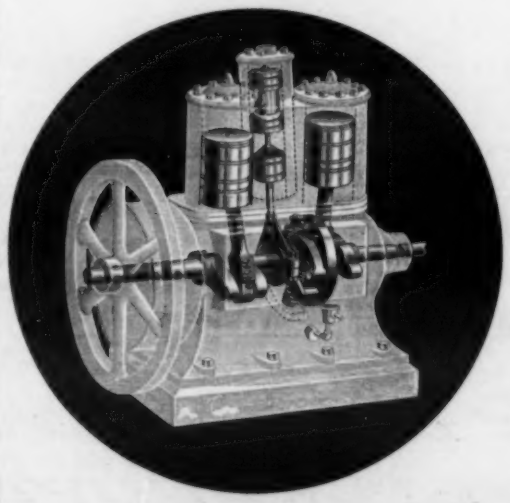

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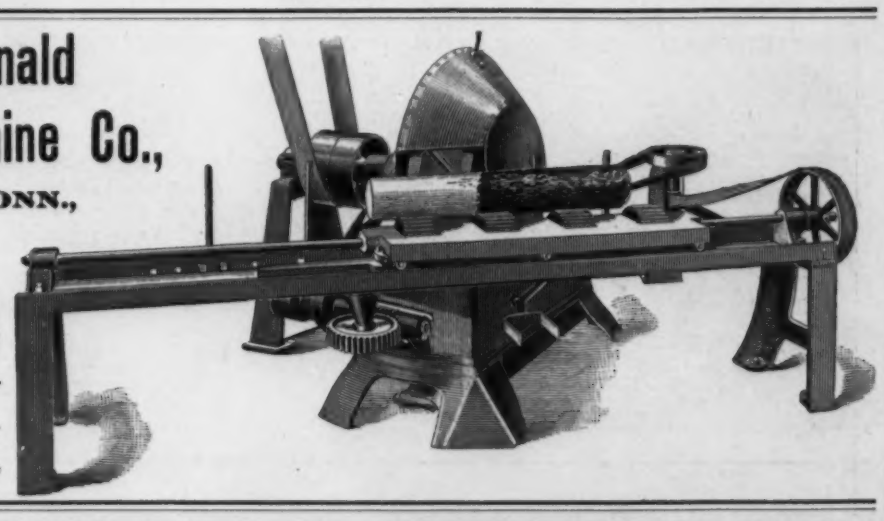

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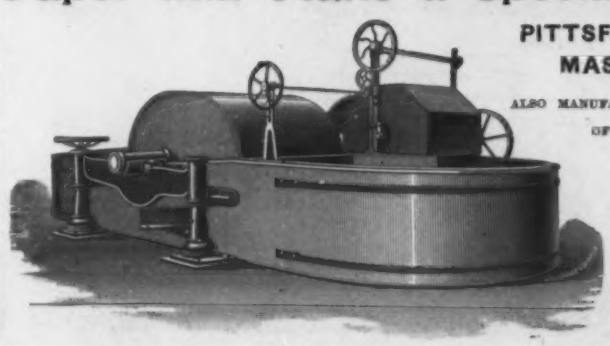

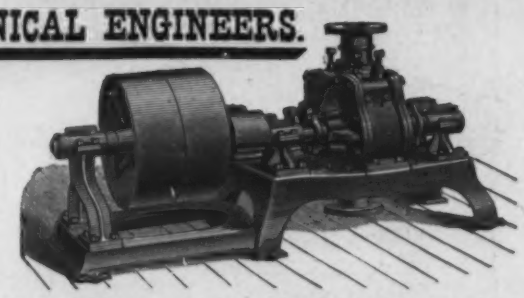

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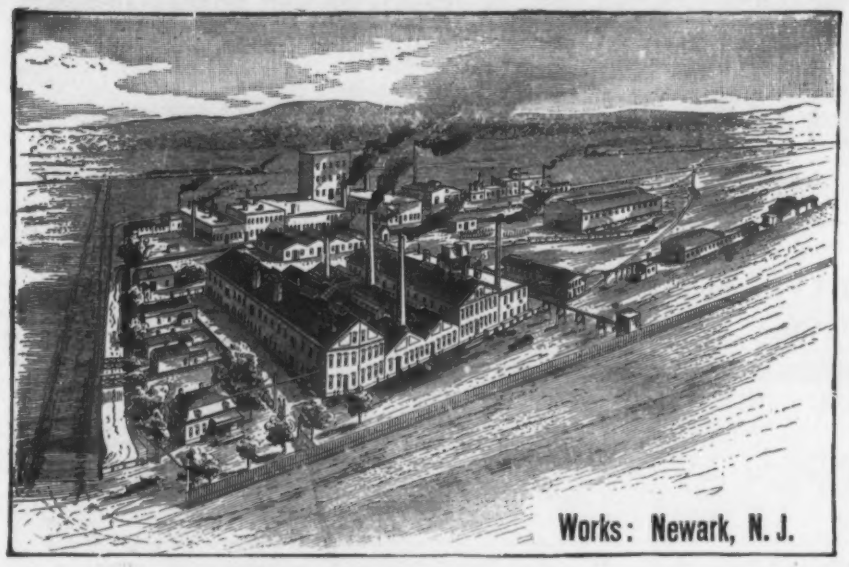
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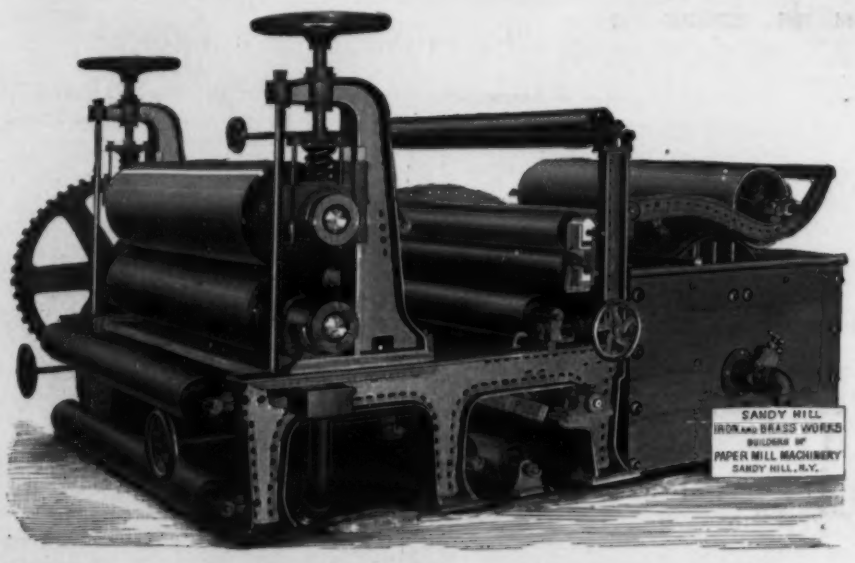

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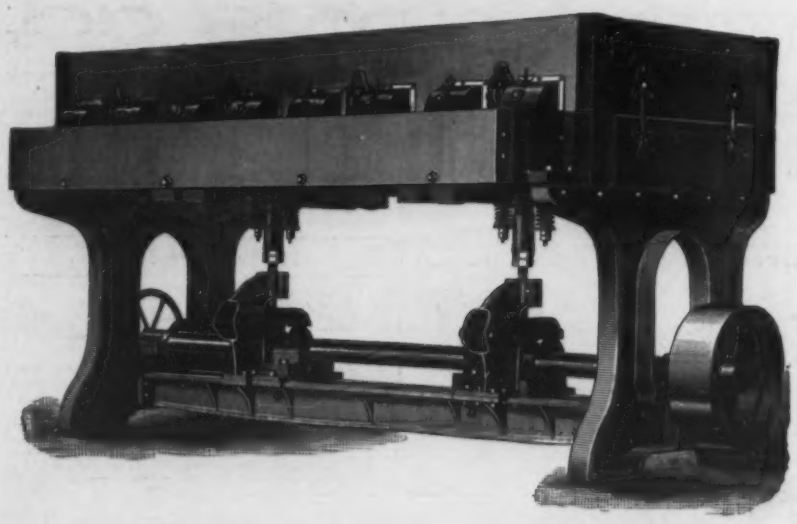

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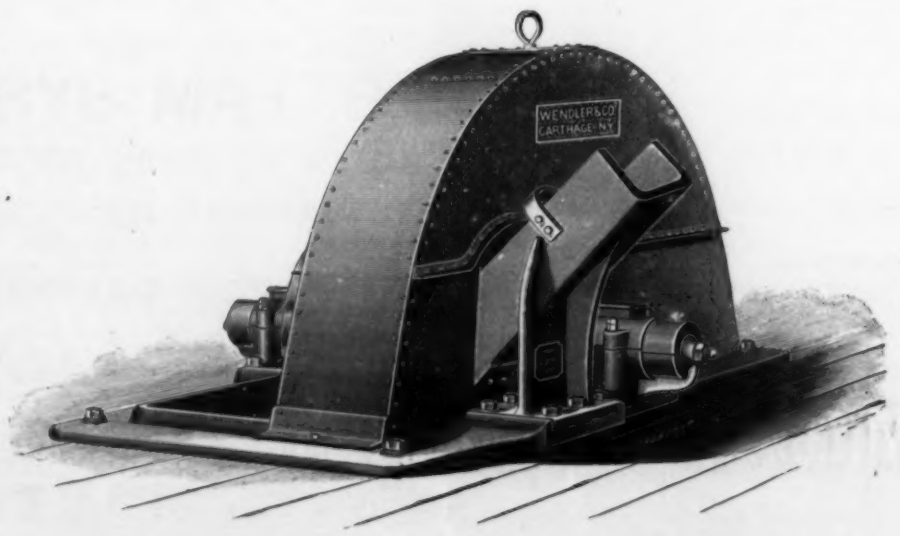

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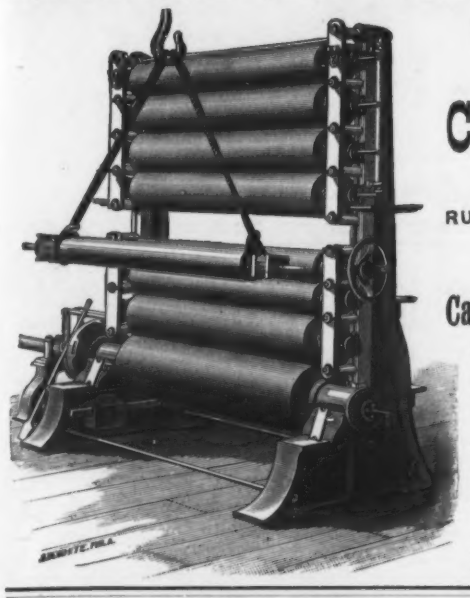

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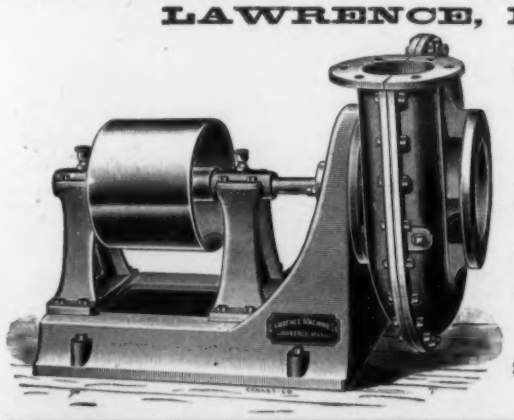

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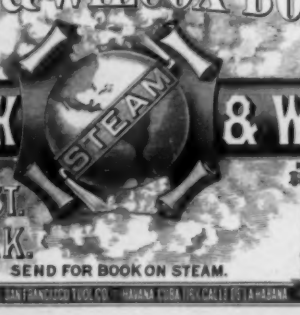

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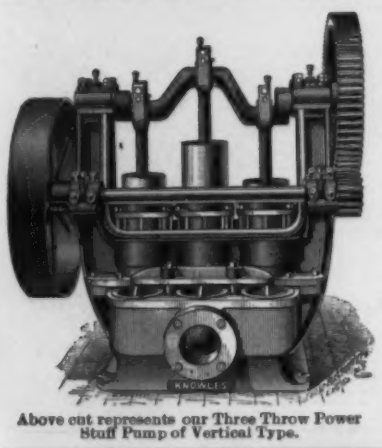

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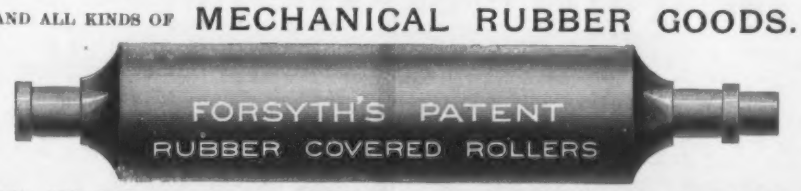

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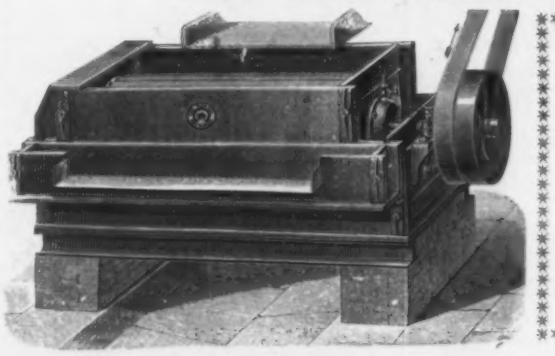

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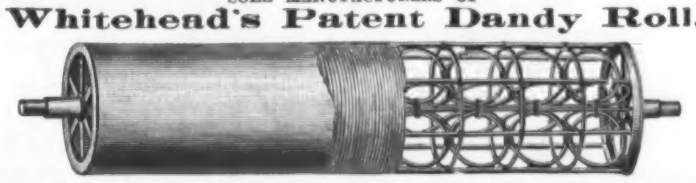

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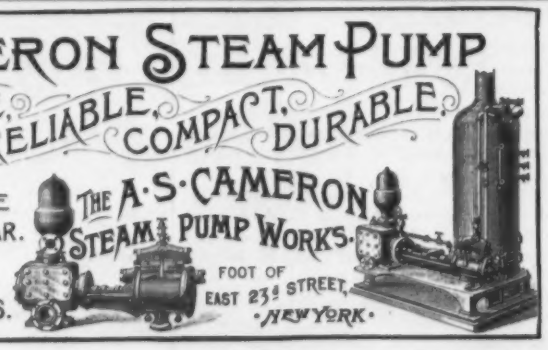

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